

Appendices

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Appendix A. Multi-State CNG MOU



Memorandum of Understanding

This Memorandum of Understanding (MOU) describes a coordinated effort between Oklahoma, Colorado, Wyoming, and Pennsylvania (States) to attract automobile manufacturers in the U.S. to develop a functional and affordable original equipment manufacturer (OEM) fleet natural gas vehicle (NGV) that will also meet public demand. The States recognize the benefits and unique attributes of clean burning natural gas and understand the significant opportunity compressed natural gas (CNG) presents to save State and taxpayer dollars by encouraging an energy future that utilizes domestic energy resources to fuel our nation's transportation needs. Through the joint solicitation of a Multi-State Request for Proposal (Joint-RFP) that aggregates annual State fleet vehicle procurements, the States will endeavor to provide a demand base sufficient to support the design, manufacture, and sale of functional and affordable OEM NGVs by automotive manufacturers in the United States.

In anticipation of soliciting a Joint-RFP, the States will endeavor to coordinate with local agencies, municipalities, and companies to determine the number of NGVs each State can commit to purchase and the required specifications necessary to meet fleet needs. The Joint-RFP shall require that the ultimate cost of an OEM NGV should be comparably priced to an equivalent gasoline powered model and that warranty and reliability concerns are not compromised. Simultaneously, the States understand the need for continued development and expansion of CNG fueling infrastructure and should endeavor to encourage private investment, predicated on demonstrating an anticipated increase in State NGVs, to meet growing demand.

Pursuant to the terms of the Joint-RFP, to be executed at a later date, the States intend, where practical, to transition new fleet vehicle acquisitions, in committed volumes, to a resulting OEM NGV. Such future acquisitions should, when economically feasible, rely on traditional distribution channels that incorporate local businesses in procurement processes. In continued recognition of the benefits of CNG, the States should also endeavor to pursue fleet vehicle conversions to CNG, where economically compelling, based on a life-cycle cost analysis. The States will also reach out to fellow Governors to determine broader interest and participation in the principles and process outlined in this MOU.

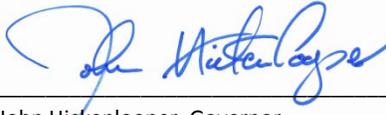
This MOU embodies the principle understandings of the States but shall not create any legal relationship, rights, duties, or obligations binding or enforceable at law or in equity. Notwithstanding the foregoing, each State shall in good faith endeavor to reach a mutually agreeable and economically beneficial Joint-RFP, as contemplated herein. This MOU does not create additional state power, enhance existing state power, or interfere with federal authority or law. This MOU shall continue to demonstrate the States' understanding until execution of the Joint-RFP, or until otherwise discontinued by either State.

Set forth this 9th day of November, 2011 by:

State of Oklahoma


Mary Fallin, Governor

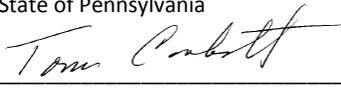
State of Colorado


John Hickenlooper, Governor

State of Wyoming


Matthew H. Mead, Governor

State of Pennsylvania


Tom Corbett, Governor

Appendix B. Partial List of CNG Fleets in Colorado

This list was developed as an initial source of information for screening fleets for participation in the case studies and has since been updated to add more fleets. This is not a comprehensive list of CNG vehicle fleets in Colorado.

Fleet	Geographic region	City	Industry/ application
City of Fort Collins	Front Range	Fort Collins	Transit
RTD Denver	Front Range	Denver	Transit
Grand Valley Transit	Western Slope	Mesa	Transit
Roaring Fork Transportation Authority	Mountains	Aspen	Transit
Republic Services Inc.	Front Range	Denver	Refuse
Alpine Waste Solutions	Front Range	Commerce City	Refuse
City of Grand Junction	Western Slope	Grand Junction	Municipal
Denver International Airport	Front Range	Denver	Airport
USAirport Parking	Front Range	Denver	Airport parking
Canopy Airport Parking	Front Range	Denver	Airport parking
UPS	Front Range	Commerce City	Parcel
City of Fort Collins	Front Range	Fort Collins	Transit
Rocky Mountain National Park	Mountains	Estes Park	Federal
Boulder Valley School District	Front Range	Boulder	School Buses
Arrupe Jesuit High School	Front Range	Denver	School Buses
Denver Bike Sharing	Front Range	Denver	Maintenance
Western Energy Alliance	Front Range	Denver	Other
Quiero Arepas Food Truck	Front Range	Denver	Food Service
Denver Zoo	Front Range	Denver	Other
Loveland Ready Mix	Front Range	Loveland	Cement
Wally Park	Front Range	Denver	Airport parking
City of Arvada	Front Range	Arvada	Municipal
GSA Fleet Management	Front Range	Lakewood	Federal
Encana	Western Slope	Rifle	Crew vehicles, supervisory
Noble Energy	Northeast	Greeley	Various
Pioneer Natural Resources	Southeast	Trinidad	Various

Appendix C. Summary of Vehicle Fleets in Colorado

Summary of Total Vehicles in Fleets by County in Colorado

County	Total vehicles	Average total number of vehicles per fleet
DENVER	41,200	170
ARAPAHOE	17,724	145
WELD	15,342	88
ADAMS	9,331	40
JEFFERSON	5,607	47
EL PASO	3,412	26
MESA	3,170	30
DOUGLAS	2,411	45
BOULDER	1,693	35
LARIMER	1,589	17
PUEBLO	938	18
MONTEZUMA	783	28
GARFIELD	592	16
MORGAN	540	16
LA PLATA	496	12
RIO GRANDE	443	13
LOGAN	329	11
YUMA	301	13
LAS ANIMAS	297	15
KIT CARSON	275	8
EAGLE	251	17
MONTROSE	249	11
FREMONT	248	14
ROUTT	231	23
PHILLIPS	230	11
RIO BLANCO	207	17
ALAMOSA	199	12
OTERO	188	10
DELTA	159	9
PROWERS	158	10
CHEYENNE	155	22
SUMMIT	130	19
GUNNISON	127	16
BROOMFIELD	98	12

County	Total vehicles	Average total number of vehicles per fleet
CHAFFEE	96	11
LINCOLN	79	16
WASHINGTON	72	9
SAN MIGUEL	70	12
CONEJOS	67	5
CUSTER	55	28
MOFFAT	54	8
ARCHULETA	53	9
GRAND	48	10
PARK	40	13
BACA	38	8
HUERFANO	30	8
PITKIN	24	12
SEDGWICK	24	5
JACKSON	23	3
ELBERT	20	4
COSTILLA	19	10
KIOWA	17	6
BENT	16	8
TELLER	15	15
OURAY	13	13
LAKE	6	6
CLEAR CREEK	5	3
Grand Total	109,987	56

Based on summary of FleetSeek vehicle fleet database

Summary of Colorado Vehicle Fleets by Sector

Sector	Total vehicles	Number of fleets by company description	Average number of vehicles
Construction or Mining	16,346	418	39
Services	22,171	290	76
General Freight	3,769	223	17
Retail / Wholesale	20,055	170	118
Food Products	4,497	156	29
Agricultural Commodities	496	107	5
Heavy Hauling	967	74	13
Bulk Commodities	978	68	14
Petroleum Prod. / Distribution	2,070	67	31
Refrigerated Solids	1,368	62	22
Mfg & Processing	2,402	58	41
Building Materials	231	51	5
Household Goods	1,257	48	26
Public Utility	29,345	43	682
Sanitation	2,052	42	49
Petroleum Products	319	22	15
Tank Truck	311	21	15
Motor Vehicle	822	15	55
Package	177	8	22
Forest Products	11	4	3
Mobile Homes	21	4	5
Refrigerated Liquids	220	3	73
Hazardous Products	61	2	31
Armored	35	1	35
Horse Carrier	6	1	6
Grand Total	109,987	1,958	56

Based on summary of FleetSeek vehicle fleet database

Appendix D. Case Study Framework

CNG Case Study Framework

Background

Interviewer to fill as much information as possible prior to interview.

- a. **Fleet company/agency name:**
- b. **Fleet contact name:**
- c. **Title:**
- d. **Email address:**
- e. **Phone number:**
- f. What **fleet application/Industry** category does the project fall into? (circle all that apply)

- | | |
|----------------------------|----------------|
| Airports | Refuse Haulers |
| Local Delivery | School Buses |
| Long-Haul Delivery | Shuttle Buses |
| Municipal | Taxis |
| Parks | Transit Buses |
| Police/Traffic Enforcement | Other Explain: |

Fleet Profile

This section asks basic questions about the fleet being featured in this case study.

- a. **Total number of vehicles in the fleet (conventional and alternative):**
- b. **Total number of CNG vehicles in fleet:**
- c. **Year the fleet began using alt fuels, AFVs, advanced technologies:**
- d. **Year the fleet began using CNG specifically:**
- e. **What vehicle category does the project fall into?**
 - Light-Duty Vehicles (< 8,500 lb. GVWR)
 - Medium-Duty (approximately 8,501-25,999 lb. GVWR)
 - Heavy-Duty Vehicles (>26,000 lb. GVWR)
 - Off-Road Vehicles, Explain: _____
- f. **Make/model of CNG vehicles (Use reverse if needed – request inventory in advance for large/diverse fleets)**
- g. **Number of OEM vs. Retrofit CNG:**
- h. **Number of Dedicated CNG vs. Bi-fuel:**

Project Motivation and Organizational Buy-In

This section asks questions about what motivated you to implement the project featured in this case study, as well as how the project was implemented.

- a. **Motivation: Please rank the following in order of importance in motivating you to do this project:**
(rank on a scale of a 1-5, 1 being most important, 5 being least important)

___ Energy security
___ Cost savings
___ Lower emissions
___ Economic development
___ Other: _____

- b. **Goals:** Describe the **overall** goals of the project. (50-100 words)
- c. **Management Consideration:** Who did you have to involve in the decision making process?
- d. **Management Buy-In:** How did you educate key decision makers on the benefits and risks of the project?
- e. **Concerns:** What were the primary concerns (Specific or general) that management expressed? How were these addressed? Were they resolved? If so, how?

Accomplishments and Project Metrics

This section asks questions about project accomplishments and reduction results.

- a. **Accomplishments:** Describe the accomplishments of the project. (100-200 words)
- b. **Petroleum Reduction:** How much petroleum did this/will this project reduce (in gallons or GGE)?
- c. **Emissions:** If applicable, how much emissions did this/will this project reduce? What tool did you use to do this?
- d. **Financial impacts, fueling:** What are the yearly fuel savings due to this project compared with a diesel/gasoline option?
- e. **Financial impacts, overall:** How much money has this project saved or cost the fleet compared with a diesel/gasoline option?
- f. **ROI:** What is the return of investment/payback period for this project?
- g. **Benefits:** What non-financial benefits did the fleet enjoy as a result of implementing this project? (e.g., behavioral changes, public image, trend setting, etc.)

Vehicle Selection

This section asks questions about the process for selecting CNG vehicles for the fleet.

- a. **Use of conversion or OEM solution:** Discuss decision to convert vehicles or buy from OEMs. If conversion, did you do conversion in-house? If so did you have to do training? If not, who did it?
- b. **Bi-fuel or dedicated natural gas vehicles:** Discuss fuel flexibility for vehicles used
- c. **Brand selection for both OEM and Conversion:** What were your important considerations regarding OEM vs. Converting vehicles? What did you end up choosing, why, and are you satisfied? How many of each?
- d. **Decision process:** How did you sort through and decide on the choices in an emerging industry? (information is usually limited, sources are harder to find, requires more effort on behalf of the buyer)
- e. **CNG or LNG:** Did you pick CNG or LNG vehicles, and why? How many of each? What manufacturers and technologies?
- f. **Vehicle performance:** What aspects of vehicle performance are you most happy with? Least? What is general level of satisfaction?
- g. **Availability and vendors:** Were there issues with availability of vehicles? Who are vendors?
- h. **Application considerations:** How specific were your application needs? How much did this affect your decision?
- i. **Partnerships:** When purchasing the vehicles, did you partner with any other fleets for vehicle/equipment buying power, training, etc?

Station Design and Economics

This section asks questions about factors related to refueling station selection, siting and performance.

- a. **Do you use in-house or market (public station) refueling stations?**
What was motivation behind choice? How well does it work?
- b. If public: How closely did you work with the public station during the exploratory and implementation phases? (did they affect sizing, technology, pace, etc)
- c. **System sizing (if applicable):** Describe compressor and storage system size/configuration

- d. **Siting and permitting (if applicable):** Did you encounter any special issues associated with building codes, siting or permitting when developing the refueling station?
- e. **What was your biggest unexpected issue?**
- f. **Vendors (if applicable):** Who were the system vendors?
- g. **Partnerships:** When designing the stations, did you partner with any other fleets for fueling equipment buying power, training, etc?
- h. **Energy use and cost (if applicable):** How do you manage electricity and natural gas demand at the pumps? Have you experienced any peak demand charges associated with the refueling station?
- i. **Fuel and O&M costs:** Please break down commodity costs, taxes, amortization, utility expenses including connection.
- j. **Commodity price hedging/forecasting:** Are any strategies employed to hedge against price increases? What's the term (length) of your fuel price contract and is your price tied to any other commodities?
- k. **Station throughput (if applicable):** What volume of fuel is used and what is the refueling frequency? Was your station built to accommodate any future growth? Speed: Fast Fill or Slow Fill? How did you determine, cost differences, etc?
- l. **How satisfied are you with the cost, availability and speed of fueling?**

Funding

This section investigates the steps needed to fund the project (pre-project, not ROI, etc)

- a. **How was the project funded?** Detail public and private financial contributions, including any loans or grants. If a grant was involved, what kind of grant was it? Would the project have occurred without it?
- b. **Barriers:** What were some of the bigger financing barriers? How were these overcome?
- c. **Vehicle purchase incentives:** Did you leverage any incentives (grants, rates, breaks, etc) when purchasing the vehicles?
- d. **Station installation incentives:** If applicable, did you leverage any incentives (grants, rates, breaks, etc) when installing the fueling stations?
- e. **Other incentives:** Are there any other financial incentives or “vehicles” at work?
- f. **Forecasting:** What financial forecasting tools were used in these decisions? ROI, NPV, etc
- g. **Financing Team:** What team members were involved in the funding aspects of this project?

Project Implementation

This section investigates the steps needed to actually get the project moving once fueling and organizational buy-in have been addressed.

- a. **Process:** Describe the project implementation process from the go/no go decision, design, construction and commissioning.
- b. **Barriers:** Describe the barriers you encountered during the project's implementation and how they were overcome. (100-200 words)
- c. **Rollout Schedule:** specific to logistics, what was your vehicle purchase/phase-in schedule? What influenced this/ (Funding, maintenance capacity, normal vehicle turnover, fueling, etc) Were fueling decisions influenced by, or affected by, this schedule?
- d. **Station Schedule:** Did you factor in your pace for rolling out CNG vehicles in construction of refueling stations and/or coordination with public CNG stations? How did it work?
- e. **Project Timeline:** What was the overall project timeline, from approval to operational?
- f. **Checkpoints:** What were your checkpoints and success gauges?
- g. **Safety Procedures:** What internal safety and emergency response procedures were affected, and how?
- h. **First Responders:** How involved were your local first responders? What provisions to handle NGVs?
- i. **Other Fleets:** For project implementation, did you leverage any partnerships with other fleets for project support, buying power, training, maintenance, fueling, etc?

Maintenance

This section asks questions about any needed facility or procedural changes associated with the CNG fleet implementation process.

- a. **Vehicle maintenance facility upgrades:** Were any needed? What were they? How well does maintenance facility perform?
- b. **Maintenance procedural changes:** What were changes in maintenance procedures? How were they rolled out and what has been the impact of them on operations?
- c. **Worker training:** How were workers trained in maintenance and safety changes? How long did it take? Were there valuable resources that could be applied in other cases? Was it "one and done" or is training a continual process (Specific to the NGVs)

- d. **Reliability vs. gasoline or diesel models:** What have been impacts on overall vehicle reliability? Are there specific issues that are significantly better or worse?
- e. **Lifetime Expectations:** Is the expected replacement rate of the NGVs longer or shorter than compared to their counterparts?
- f. **Lifetime Costs:** Compared to their counterparts, are the lifetime maintenance costs expected to be higher or lower?
- g. **Unexpected:** Describe any unexpected savings or expenses:
- h. **Vendors:** What changes or new vendor relationships were needed?

Lessons Learned and Next Steps

This section asks questions about lessons learned from the project and what the fleet has planned next.

- a. **Lessons Learned:** Describe what was learned from implementing this project? By category:

Optimizing cost savings/reducing implementation costs

Project implementation

Vehicle choice

Maintenance

Refueling

- b. **Best Practices:** How have these lessons been turned into best practices for the organization, and how effectively have they been implemented?
- c. **Advice:** What advice can you offer other fleets who want to implement a similar project?
- d. **Plans:** Do you plan to grow what's been implemented or do you have any future plans for petroleum reduction?

Thank you! Thank you for providing thoughtful concise answers to the questions in this questionnaire. The information provided will help GEO build a useful database of case studies that will provide other fleets with real-world information about how to implement successful alternative transportation projects in Colorado.

Appendix E. Results of Grand Junction CNG/Diesel Vehicle Bids

		Price Ea	Ext Price	Make & Model	Tax Credit Rec'd	Tax credit to City	Trade in 3025	Trade in 3029	Trade in 3277	Total for all deducts
Transwest Trucks Commerce City, CO	CNG	\$276,852.00	\$830,556.00	2011 Autocar w/Heil	N/A	\$0.00	\$30,000.00	\$30,000.00	\$30,000.00	\$740,556.00
	Diesel	\$234,159.00	\$702,477.00	2011 Autocar w/Heil	N/A	\$0.00	\$30,000.00	\$30,000.00	\$30,000.00	\$612,477.00
	CNG	\$247,764.00	\$743,292.00	2011 Autocar w/Bridgeport	N/A	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$683,292.00
	Diesel	\$212,892.00	\$638,676.00	2011 Autocar w/Bridgeport	N/A	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$578,676.00
Grand Jct Peterbilt, Fruita, CO	CNG	\$279,863.00	\$839,589.00	Peterbilt 320 w/Heil	??	\$0.00	\$30,000.00	\$30,000.00	\$30,000.00	\$749,589.00
	Diesel	\$274,363.00	\$823,089.00	Peterbilt 320 w/Heil	N/A	\$0.00	\$30,000.00	\$30,000.00	\$30,000.00	\$733,089.00
Western Colo Truck Center/ Mesa Mack	CNG	\$300,552.00	\$901,656.00	2011 Mack w/2010 Heil	\$32,000.00	\$8,000.00	\$40,280.00	\$40,280.00	\$40,280.00	\$772,816.00
	Diesel	\$255,047.00	\$765,141.00	2011 Mack w/2010 Heil	N/A	\$0.00	\$40,280.00	\$40,280.00	\$40,280.00	\$644,301.00
	CNG	\$319,285.00	\$957,855.00	2011 Mack w/2010 New Way	\$32,000.00	\$8,000.00	\$40,250.00	\$40,250.00	\$40,250.00	\$829,105.00
	Diesel	\$272,341.00	\$817,023.00	2011 Mack w/2010 New Way	N/A	\$0.00	\$40,250.00	\$40,250.00	\$40,250.00	\$696,273.00
	CNG	\$271,464.00	\$814,392.00	2011 Mack w/2010 Bridgeport	\$32,000.00	\$8,000.00	\$40,250.00	\$40,250.00	\$40,250.00	\$685,642.00
	Diesel	\$233,780.00	\$701,340.00	2011 Mack w/2010 Bridgeport	N/A	\$0.00	\$40,250.00	\$40,250.00	\$40,250.00	\$580,590.00
Faris Machinery <i>ough</i> <i>Two</i> →	CNG	\$284,691.00	\$854,073.00	2010 Autocar w/2010 Labrie	Not Participating	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$794,073.00
	Diesel	\$245,359.00	\$736,077.00	2010 Autocar w/2010 Labrie	N/A	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$676,077.00
	CNG	\$286,703.00	\$860,109.00	2010 Peterbilt 320 w/2010 Labrie	Not Participating	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$800,109.00
	Diesel	\$246,185.00	\$738,555.00	2010 Peterbilt 320 w/2010 Labrie	N/A	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$678,555.00
	CNG	\$308,391.00	\$925,173.00	2011 Mack w/2010 Labrie	\$32,000.00	\$8,000.00	\$40,280.00	\$40,280.00	\$40,280.00	\$796,333.00
	Diesel	\$266,247.00	\$798,741.00	2011 Mack w/2010 Labrie	N/A	\$0.00	\$40,280.00	\$40,280.00	\$40,280.00	\$677,901.00

Winning bid (price is for 2 vehicles)

Appendix F. CNG Station Design Bid Documents from City of Grand Junction



**Request for Proposal
RFP-3201-10-SDH
City of Grand Junction CNG Fill Station Design Services**

RESPONSES DUE:

March 23, 2010 Prior to 2:00 p.m.
City Clerk's Office
250 N. 5th Street
Grand Junction, CO 81501

PURCHASING REPRESENTATIVE:

Scott Hockins
Purchasing Supervisor
scotth@gjcity.org
Phone (970) 244-1484

TECHNICAL/SCOPE OF SERVICES QUESTIONS:

Bret Guillory, PE, CFM
Utility Engineer
bretg@gjcity.org
Phone (970) 244-1590

February 19, 2010

This solicitation has been developed specifically for a Request for Proposal intended to solicit competitive responses for the **City of Grand Junction CNG Fill Station Design Services**, and may not be the same as previous City of Grand Junction solicitations. All offerors are urged to thoroughly review this solicitation prior to submitting. Submittal by **FAX IS NOT ACCEPTABLE** for this solicitation.

REQUEST FOR PROPOSAL

City of Grand Junction CNG Fill Station Design Services

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REQUEST FOR PROPOSAL

RFP-3201-10-SDH

City of Grand Junction CNG Fill Station Design Services

SECTION 1.0: ADMINISTRATIVE INFORMATION & CONDITIONS FOR SUBMITTAL

- 1.1 Issuing Office:** This Request for Proposal (RFP) is issued for the City of Grand Junction (City) by the Purchasing Division, on behalf of City of Grand Junction, Public Works and Planning. All contact regarding this RFP is directed to:

RFP QUESTIONS & SUBMITTALS:

Scott Hockins, Purchasing Supervisor
City of Grand Junction
250 N 5th Street
Grand Junction, CO 81501
970-244-1484

SCOPE OF SERVICES DETAILS:

Bret Guillory, PE, CFM Utility Engineer
City of Grand Junction
250 N 5th Street
Grand Junction, CO 81501
970-244-1590

- 1.2 Purpose:** The purpose of this RFP is to obtain competitive proposals from qualified individuals or firms, interested in providing recommendations, and design for a CNG Fill Station that will allow for utilization of a slow fill station with future expansion to fast fill station.
- 1.3 Compliance:** All participating Offerors, by their signature hereunder, shall agree to comply with all conditions, requirements, and instructions of this RFP as stated or implied herein. Should the City of Grand Junction omit anything from this packet which is necessary to the clear understanding of the requirements, or should it appear that various instructions are in conflict, the Offerors shall secure instructions from the Purchasing Division prior to the date and time of the submittal deadline shown in this RFP.
- 1.4 Submission:** Please refer to section 5.0 for what is to be included. Each proposal shall include **three (3) copies** and **one (1) electronic copy**, placed in a sealed envelope and marked clearly on the outside with the consultant's name "**RFP-3201-10-SDH City of Grand Junction CNG Fill Station Design Services.**" For proper comparison and evaluation, the City requests that proposals be formatted as directed in Section 5.0 "Preparation and Submittal of Proposals." Submittals received that fail to follow this format may be ruled non-responsive.
- 1.5 Proposal Deadline:** Proposals are due by March 23, 2010 prior to 2:00pm in the City Clerk's Office at 250 N. 5th Street, Grand Junction, CO 81501.
- 1.6 Altering Proposals:** Any alterations made prior to opening date and time must be initialed by the signer of the proposal, guaranteeing authenticity. Proposals cannot be altered or amended after submission deadline.
- 1.7 Withdrawal of Proposal:** A proposal must be firm and valid for award and may not be withdrawn or canceled by the Offeror prior to the sixty-first (61st) day following the submittal deadline date and only prior to award. The Offeror so agrees upon submittal of their proposal. After award this statement is not applicable.

- 1.8 Acceptance of Proposal Content:** The contents of the proposal of the successful Offeror shall become contractual obligations if acquisition action ensues. Failure of the successful Offeror to accept these obligations in a contract shall result in cancellation of the award and such vendor shall be removed from future solicitations.
- 1.9 Exclusion:** No oral, telegraphic, or telephonic proposals shall be considered.
- 1.10 Addenda:** All Questions shall be submitted in writing to the appropriate person as shown in Section 1.1 within the timeframe shown in Section 4.3. Any interpretations, corrections and changes to this RFP or extensions to the opening/receipt date shall be made by a written Addendum to the RFP by the City Purchasing Division, on behalf of the Public Works Engineering Division. Sole authority to authorize addenda shall be vested in the City of Grand Junction Project Manager and the Purchasing Representative. Addenda will be issued electronically through Bidnet at www.rockymountainbidsystem.com to all who are known to have received a copy of the RFP. Offerors shall acknowledge receipt of all addenda in their proposal.
- 1.11 Exceptions and Substitutions:** All proposals meeting the intent of this RFP shall be considered for award. Offerors taking exception to the specifications shall do so at their own risk. The City reserves the right to accept or reject any or all substitutions or alternatives. When offering substitutions and/or alternatives, Offeror must state these exceptions in the section pertaining to that area. Exception/substitution, if accepted, must meet or exceed the stated intent and/or specifications. The absence of such a list shall indicate that the Offeror has not taken exceptions, and if awarded a contract, shall hold the Offeror responsible to perform in strict accordance with the specifications or scope of work contained herein.
- 1.12 Confidential Material:** All materials submitted in response to this RFP shall ultimately become public record and shall be subject to inspection after contract award. "Proprietary or Confidential Information" is defined as any information that is not generally known to competitors and which provides a competitive advantage. Unrestricted disclosure of proprietary information places it in the public domain. Only submittal information clearly identified with the words "**Confidential Disclosure**" and placed in a separate envelope shall establish a confidential, proprietary relationship. Any material to be treated as confidential or proprietary in nature must include a justification for the request. The request shall be reviewed and either approved or denied by the Purchasing Manager. If denied, the proposer shall have the opportunity to withdraw its entire proposal, or to remove the confidential or proprietary restrictions. Neither cost nor pricing information nor the total proposal shall be considered confidential or proprietary.
- 1.13 Response Material Ownership:** All proposals become the property of the City of Grand Junction upon receipt and shall only be returned to the proposer at the City's option. Selection or rejection of the proposal shall not affect this right. The City shall have the right to use all ideas or adaptations of the ideas contained in any proposal received in response to this RFP, subject to limitations outlined in the section 1.12 entitled "Confidential Material". Disqualification of a proposal does not eliminate this right.

1.14 Minimal Standards for Responsible Prospective Offerors: A prospective Offeror must affirmably demonstrate their responsibility. A prospective Offeror must meet the following requirements:

- Have adequate financial resources, or the ability to obtain such resources as required
- Be able to comply with the required or proposed completion schedule
- Have a satisfactory record of performance
- Have a satisfactory record of integrity and ethics
- Be otherwise qualified and eligible to receive an award and enter into a contract with the City of Grand Junction

1.15 Open Records: Proposals shall be received and publicly acknowledged at the location, date, and time stated herein. Offerors, their representatives and interested persons may be present. Proposals shall be received and acknowledged only so as to avoid disclosure of process. However, all proposals shall be open for public inspection after the contract is awarded. Trade secrets and confidential information contained in the proposal so identified by offer as such shall be treated as confidential by the City to the extent allowable in the Open Records Act.

1.16 Sales Tax: City of Grand Junction is, by statute, exempt from the State Sales Tax and Federal Excise Tax; therefore, all fees shall not include taxes.

SECTION 2.0: GENERAL CONTRACT TERMS AND CONDITIONS

2.1 Acceptance of RFP Terms: A proposal submitted in response to this RFP shall constitute a binding offer. Acknowledgment of this condition shall be indicated on the Letter of Interest by the autographic signature of the Offeror or an officer of the Offeror legally authorized to execute contractual obligations. A submission in response to the RFP acknowledges acceptance by the Offeror of all terms and conditions including compensation, as set forth herein. An Offeror shall identify clearly and thoroughly any variations between its proposal and the City's RFP requirements. Failure to do so shall be deemed a waiver of any rights to subsequently modify the terms of performance, except as outlined or specified in the RFP.

2.2 Amendment: No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting contract. All amendments to the contract shall be made in writing by the City Purchasing Division.

2.3 Assignment: The Consultant shall not sell, assign, transfer or convey any contract resulting from this RFP, in whole or in part, without the prior written approval from the City.

2.4 Compliance with Laws: Proposals must comply with all Federal, State, County and local laws governing or covering this type of service and the fulfillment of all ADA (Americans with Disabilities Act) requirements.

- 2.5 Confidentiality:** All information disclosed by the City to the Consultant for the purpose of the work to be done or information that comes to the attention of the Consultant during the course of performing such work is to be kept strictly confidential.
- 2.6 Conflict of Interest:** No public official and/or City employee shall have interest in any contract resulting from this RFP.
- 2.7 Contract:** This Request for Proposal, submitted documents, and any negotiations, when properly accepted by the City of Grand Junction, shall constitute a contract equally binding between the City and Consultant. No different or additional terms shall become a part of this Contract with the exception of an Amendment.
- 2.8 Project Manager:** The Project Manager, on behalf of the City, shall render decisions in a timely manner pertaining to the work proposed or performed by the Consultant. The project manager shall be responsible for approval and/or acceptance of any related performance of the Scope of Services.
- 2.9 Contract Termination:** This contract shall remain in effect until any of the following occurs: (1) contract expires; (2) completion of services; (3) acceptance of services or, (4) for convenience terminated by either party with a written *Notice of Cancellation* stating therein the reasons for such cancellation and the effective date of cancellation.
- 2.10 Employment Discrimination:** During the performance of any services per agreement with the City, the Consultant, by submitting a Proposal, agrees to the following conditions:
- 2.10.1** The Consultant shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, handicap, or national origin except when such condition is a legitimate occupational qualification reasonably necessary for the normal operations of the Consultant. The Consultant agrees to post in conspicuous places, visible to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- 2.10.2** The Consultant, in all solicitations or advertisements for employees placed by or on behalf of the Consultant, shall state that such Consultant is an Equal Opportunity Employer.
- 2.10.3** Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- 2.11 Ethics:** The Offeror shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official, or agent of the City.
- 2.12 Failure to Deliver:** In the event of failure of the Consultant to deliver services in accordance with the contract terms and conditions, the City, after due oral or written notice, may procure the services from other sources and hold the Consultant responsible for any costs resulting in additional purchase and administrative services. This remedy shall be in addition to any other remedies that the City may have.

- 2.13 Failure to Enforce:** Failure by the City at any time to enforce the provisions of the contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the contract or any part thereof or the right of the City to enforce any provision at any time in accordance with its terms.
- 2.14 Force Majeure:** The Consultant shall not be held responsible for failure to perform the duties and responsibilities imposed by the contract due to legal strikes, fires, riots, rebellions, and acts of God beyond the control of the Consultant, unless otherwise specified in the contract.
- 2.15 Indemnification:** Consultant shall defend, indemnify and save harmless the City of Grand Junction, State of Colorado, and all its officers, employees, insurers, and self-insurance pool, from and against all liability, suits, actions, or other claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person, persons, or property on account of any negligent act or fault of the Consultant, or of any Consultant's agent, employee, subcontractor or supplier in the execution of, or performance under, any contract which may result from proposal award. Consultant shall pay any judgment with cost which may be obtained against the City growing out of such injury or damages.
- 2.16 Independent Consultant:** The Consultant shall be legally considered an Independent Consultant and neither the Consultant nor its employees shall, under any circumstances, be considered servants or agents of the City of Grand Junction. The City shall be at no time legally responsible for any negligence or other wrongdoing by the Consultant, its servants, or agents. The City shall not withhold from the contract payments to the consultant any federal or state unemployment taxes, federal or state income taxes, Social Security Tax or any other amounts for benefits to the consultant. Further, the City shall not provide to the Consultant any insurance coverage or other benefits, including Workers' Compensation, normally provided by the City for its employees.
- 2.17 Nonconforming Terms and Conditions:** A proposal that includes terms and conditions that do not conform to the terms and conditions of this Request for Proposal is subject to rejection as non-responsive. The City of Grand Junction reserves the right to permit the Offeror to withdraw nonconforming terms and conditions from its proposal prior to a determination by the City of non-responsiveness based on the submission of nonconforming terms and conditions.
- 2.18 Ownership:** All plans, prints, designs, concepts, etc., shall become the property of the City of Grand Junction.
- 2.19 Oral Statements:** No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in this document and/or resulting agreement. All modifications to this request and any agreement must be made in writing by the City of Grand Junction.
- 2.20 Patents/Copyrights:** The Consultant agrees to protect the City of Grand Junction from any claims involving infringements of patents and/or copyrights. In no event shall the City

be liable to a Consultant for any/all suits arising on the grounds of patent(s)/copyright(s) infringement. Patent/copyright infringement shall null and void any agreement resulting from response to this RFP.

2.21 Remedies: The Consultant and City agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.

2.22 Venue: Any agreement as a result of responding to this RFP shall be deemed to have been made in, and shall be construed and interpreted in accordance with, the laws of the City of Grand Junction, Mesa County, Colorado.

SECTION 3.0: INSURANCE REQUIREMENTS

3.1 Insurance Requirements: The Consultant agrees to procure and maintain, at its own cost, policy(s) of insurance sufficient to insure against all liability, claims, demands, and other obligations assumed by the Consultant pursuant to this Section. Such insurance shall be in addition to any other insurance requirements imposed by this Contract or by law. The Consultant shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to this Section by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

3.2 Consultant shall procure and maintain and, if applicable, shall cause any Subcontractor of the Consultant to procure and maintain insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to The City of Grand Junction. All coverage shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by the Consultant pursuant to this Section. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage. Minimum coverage limits shall be as indicated below unless specified otherwise in the Special Conditions:

General Liability insurance with minimum combined single limits of:

ONE MILLION DOLLARS (\$1,000,000) each occurrence and
ONE MILLION DOLLARS (\$1,000,000) per job aggregate.

The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, products, and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards. The policy shall contain a severability of interests provision.

Professional Liability & Errors and Omissions Insurance policy with a minimum of \$1,000,000 per claim. This policy shall provide coverage to protect the contractor against liability incurred as a result of the professional services performed as a result of responding to this RFP.

- 3.3 The policies required by paragraphs above shall be endorsed to include the City and the City's officers and employees as additional insured. Every policy required above shall be primary insurance, and any insurance carried by the City, its officers, or its employees, or carried by or provided through any insurance pool of the City, shall be excess and not contributory insurance to that provided by Consultant. No additional insured endorsement to any required policy shall contain any exclusion for bodily injury or property damage arising from completed operations. The Consultant shall be solely responsible for any deductible losses under any policy required above.

SECTION 4.0: SCOPE OF SERVICES

- 4.1. **Background:** The City of Grand Junction is interested in installing a CNG fill station that can be utilized for new CNG fueled solid waste vehicles. The City has purchased four CNG fueled solid waste disposal trucks. A slow fill CNG fueling station will be needed to provide fuel to the new trucks. The City is interested in partnering with a private venture that will include future expansion of the fueling station to include a fast fill component.

Therefore, the City of Grand Junction, Purchasing Division is requesting proposals from Consulting Civil Engineers to provide design services, prepare construction drawings and bid documents for CITY OF GRAND JUNCTION CNG FUELING STATION PROJECT. The project calls for the following:

1. Design of a CNG slow fill fueling station that will be modified at a future date to include fast fill fueling options.
2. Design considerations shall include redundancy in the system in that this will be the only source of fuel in Western Colorado.
3. The system shall be capable of supplying a minimum of 150 diesel gallon equivalents (DGE) in a 14 hour period from the slow fill site, along with capability to expand to 1,000 DGE's in the future.

The Consultant shall be responsible for the evaluating alternatives, providing design for the select alternative including; design, final CAD drawing, bid documents, and other related services which are included in the following scope of work:

The design and evaluation effort shall include design for a slow fill station that will be suitable for current and minor expansion to service City Solid Waste needs, including future expansion of the fueling facilities and site to include fast fill at an adjacent site. This effort will also include design and specification for a maintenance facility adjacent to the fill station location. The facility will include appurtenances suitable for maintenance of CNG fueled vehicles, and be sized to allow for maintenance of two solid waste vehicles simultaneously. As an alternate to a new structure we will be interested in remodeling two bays in the existing Fleet Maintenance service building to allow for maintenance of CNG vehicles. We would like evaluation of these two alternatives included with this proposal.

The City would like to complete construction of this improvement in late summer of 2010.

4.2. Consultants Responsibilities: The scope of work shall include the following components:

4.2.1. Task One: Project Coordination.

4.2.1.1. Work Task Coordination: The Consultant PM shall assign and coordinate all work tasks being accomplished, including those to be performed by sub consultants, to ensure project work is completed on schedule.

4.2.1.2. Project Team Coordination: The City PM and the Consultant PM shall maintain ongoing communication about the project on a frequent and regular basis. Each PM shall provide the other with

- Copies of pertinent written communications, including electronic (email) correspondence
- Early identification of potential problems or concerns

4.2.1.3. Progress Meetings: It is anticipated that this effort will have a short time frame with design of the station estimated to be completed within one month. Two meetings will be conducted to coordinate efforts and maintain the schedule for the project. The meetings shall focus on the following topics:

- Activities completed since the last meeting
- Problems encountered or anticipated
- Late activities/activities slipping behind schedule
- Solutions for unresolved or newly identified problems
- Schedule of upcoming activities
- Information on items required/comments from City of Grand Junction.

Meetings may be conducted via conference call.

4.2.2. Task Two: Design Plans and Construction Bid Documents: The consultant will prepare final design plans and bid documents. These shall be submitted to the City for review and approval. Review of the documents and plans will be completed by the City of Grand Junction Utility Engineer and Deputy Director of Utilities and Streets Systems for the City of Grand Junction. The final plans, and construction bid documents shall be stamped by a professional engineer registered in the State of Colorado. This is to be accomplished allowing for adequate public advertisement of the project (30 days) and award by City Council (2 weeks following advertisement period) to allow construction to occur during the months of August and September, 2010.

City provided Materials

The City will provide copies of the following information:

- Survey of the site including location of all existing utilities, and adequate horizontal and vertical control.
- Base mapping for the site (provided in Auto CADD version 2010).

4.2.3 Task Three: Final Bid Documents and Drawings: The consultant will prepare Special Provisions and Special Conditions for the final bid documents including the following specifications: gas supply and connections, gas components, electrical component listing, electrical materials and contacts, electrical conduit (above and below ground), electrical component and listings, mechanical and piping, codes and standards for compliance, general performance specifications, start up and testing procedures, and all other specification needed to provide a complete bid package. All specifications shall be provided in accordance with the City of Grand Junction Standard Contract Documents for Capital Improvements Construction, Revised February 2009. The City will compile final bid documents utilizing Special Provisions and Special Conditions furnished by the consultant. These documents shall be complete and adequate to obtain competitive construction bids for the CNG Fill Station project.

Construction drawings for the project shall include the following: Title page, area layout(s), gas schematic diagram(s) including the process and instrument diagram, electrical single line diagram, mechanical layout, safety sign descriptions and location, and other drawings as needed to provide a complete bid package.

The consultant will also provide the City with an engineering estimate of cost to construct the project that will be used to evaluate adequacy of currently budgeted funds.

4.2.3.1 Reproduction: The Consultant will plot, print, and reproduce the final construction drawings and contract documents in the following quantities:

11 x 17 (half size):	1 copy plus 1 original (not bound)
22 x 34 (full size):	1 copy plus 1 reproducible set
Contract Documents :	1 original (Wet stamped by Colorado PE)
(Special Provisions and Special Conditions)	

The contract documents shall be provided unbound. Printing shall be single sided. Specifications shall be provided in electronic format (Word 2007), drawings shall be provided in electronic format (Auto CADD version 2010) or compatible Auto CADD version.

4.2.3.2 Authentication: The Consultant's Professional Engineer responsible for the project design shall affix his stamp and signature to one copy of the final drawings, and bid documents.

4.3 Project Time Schedule: Offeror **must** provide with proposal submittal a time schedule for completion of the Project "Scope of Services." The preferred project schedule is depicted below.

March 8, 2010 at 2:00pm	On Site Meeting and Tour at 333 West Ave, Bldg A
March 15, 2010	Last day to Submit Technical Questions
March 23, 2010	Proposals Due
March 24, 2010	Selection of Consultant
April 7, 2010	City Council Award (if needed)
April 8, 2010	Notice to Proceed

May 10, 2010
June 1, 2010
June 14, 2010
September 15, 2010

Final Design Complete
Open Bids for Construction
Award Construction Contract
Complete Construction

SECTION 5.0: PREPARATION AND SUBMITTAL OF PROPOSALS

- 5.1** Offerors are required to provide **three (3) copies** of their proposal in written format and **one (1) copy in electronic format**, compatible with Microsoft Office Word 2007. Offerors are required to indicate their interest in this Project, show their specific experience and address their capability to perform the Scope of Services in the Time Schedule as set forth herein. For proper comparison and evaluation, the City requests that proposals be formatted **A** to **G**. Proposals must contain all of the following information to satisfy the requirements of this RFP:
- A. Cover Letter:** Cover letter shall be provided which succinctly explains the Consultant's interest in the project. The letter shall contain the name/address/phone number and email address of the person who will serve as the firm's principal contact person with City's Contract Administrator and shall identify individual(s) who will be authorized to make presentations on behalf of the firm. The statement shall bear the signature of the person having proper authority to make formal commitments on behalf of the firm.
 - B. Qualifications of Firm/Project Team:** Provide names, titles and responsibilities of key personnel who will be responsible for the management and design of this project. Include qualifications, experience of each, and length of time with the company.
 - C. Strategy and Implementation Plan:** Describe your (the consultant's) interpretation of the City's objectives with regard to this RFP. Describe the proposed strategy and/or plan for achieving the objectives of this RFP. Offeror may utilize a written narrative or any other printed technique to demonstrate his/her ability to satisfy the Scope of Services. The narrative should describe the firm's particular abilities and qualifications related to this project. If the firm has multiple office locations, specify which office shall complete the primary design work. Interested firms shall demonstrate previous experience with planning and development of all design work associated with CNG Fueling Stations.
 - D. References:** Provide a list and description of other projects designed by your firm or by key personnel that are similar or pertinent to this project. Provide references and contact information of owner for the projects. List should include a brief description of each project.
 - E. Outside Consultants:** List any outside consultants or firms who might perform services for this project. Provide resumes of key individuals and describe what services that each outside firm would provide, and at least three previous projects demonstrating the firm's capability to perform these services.
 - F. Capacity:** Address your firm's capacity and depth to complete the Final Design scope by May 2, 2010 assuming a notice to proceed date of April 2, 2010.

- G. Cost not to Exceed Proposal:** Cost proposals shall be submitted for tasks 1, 2 and 3 only. The City intends to enter into a contract with the selected Consultant for sections 1, 2 and 3 only. At the conclusion of tasks 1, 2 and 3 the City may choose to negotiate with the Consultant for construction services associated with this project.

SECTION 6.0: EVALUATION CRITERIA AND FACTORS

- 6.1 Evaluation:** An evaluation team shall review all responses and select the proposal or proposals that best demonstrate the capability in all aspects to perform the scope of services and possess the integrity and reliability that will ensure good faith performance.
- 6.2 Intent:** Only respondents who meet the qualification criteria will be considered for selection. Therefore, it is imperative that the submitted proposal clearly indicate the firm's ability to provide the services described herein.

Submittal of evaluations will be done in accordance with the criteria and procedure defined herein. Companies considered for selection will be chosen on the basis of their apparent ability to best meet the overall expectations of the City. The City reserves the right to reject any and all submittals. The following parameters will be used to evaluate the submittals (in no particular order of priority):

- Responsiveness of submittal to the RFP
- Understanding of the project and the objectives
- Necessary resources
- Experience
- Required skills
- Demonstrated capability
- References

- 6.3 Award:** The contract for tasks 1, 2 and 3 will be awarded to the firm that is deemed most qualified to perform the scope of services based on the project team qualifications, prior experience working together, approach to the project, ability to complete the project in the necessary time frame, location of firm and workforce, and references. Firms shall be ranked or disqualified based on the above. Cost proposals will be evaluated as part of the selection process. The lowest cost proposal does NOT guarantee that Consultant shall be selected. The City reserves the right to consider all of the information submitted in selecting the project Consultant.

End RFP

***CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION***

BID DOCUMENTS

FOR

CNG Slow-Fill Station & Shop Bay Upgrades

IFB-3248-10-SDH



July, 2010

Book No. ____

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION

BID DOCUMENTS
FOR
CNG Slow-Fill Station & Shop Bay Upgrades

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BID INFORMATION

INVITATION TO BID

The City of Grand Junction will receive sealed bids at the Office of the City Clerk at City Hall, 250 North Fifth Street, Grand Junction, Colorado, 81501, prior to 2:30 p.m. on July 20, 2010 for CNG Slow-Fill Station & Shop Bay Upgrades. All bids will be opened and read aloud at the City Auditorium immediately following the submittal deadline. The project generally consists of installation of 100 SCFM gas meter, 500 SCFM gas dryer, two - 50 SCFM gas compressors (40 hp each), 10 – time fill dispenser hose drops, site grading, equipment pads, fencing/barricades, telephone system, associated electrical and gas plumbing, alarm system and associated appurtenances; Retrofitting two existing bay areas with; new partition wall & interior man door, explosion proof receptacles, gas detection alarm system, exterior bay door, motor operator(s), combustible gas sensor, HVAC modifications, plumbing, associated work and appurtenances.

Plans, Specifications and other Bid Documents may be reviewed at the Administration Office of the Department of Public Works and Planning at City Hall. Copies thereof may be obtained for a non-refundable sum of \$75 per set.

The March 2010 edition of the “City Standard Contract Documents for Capital Improvements Construction” is also available for purchase.

For additional technical information, please contact Bret Guillory, PE, Utility Engineer at the Department of Public Works and Planning (970-244-1590).

For contractual information, please contact Scott Hockins, Purchasing Supervisor (970-244-1484).

A pre-bid meeting will be held at 2:00 p.m. on July 13, 2010, in the Executive Conference Room, Room 242, at City Hall. Attendance at the meeting is not mandatory but is strongly recommended.

The City Clerk’s Office will stamp the date and mark the time received on all bids. Bids not received prior to the date and time indicated on the Invitation to Bid will not be considered. The City is not responsible for delays occasioned by the U.S. Postal Service, the internal mail delivery system of the City, or any other means of delivery employed by the Bidder.

Each Bid shall be submitted on a form furnished by the City and must be accompanied by a certified check, cashier’s check or Bid Bond in an amount not less than 5% of the amount of the Bid and made payable to the City of Grand Junction, Colorado. The successful Bidder will be required to furnish a Performance Bond and a Labor and Material Payment Bond, both in the amount of 100% of the total Contract amount, in conformity with the requirements of the Contract Documents and on forms provided by the City.

Contractors submitting bids over \$50,000 must be prequalified in accordance with the City's "Rules and Procedures for Prequalification of Contractors." Bids received from non-prequalified contractors will not be opened. Application forms for prequalification are available at the Administration Office of the Department of Public Works and Planning (970-256-4126).

Contractors submitting bids shall also supply company information as described in Section 13 of the Instruction to Bidders.

CITY OF GRAND JUNCTION, COLORADO

Scott Hockins, Purchasing Supervisor

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION

INSTRUCTIONS TO BIDDERS

The following instructions are given for the purpose of guiding Bidders in properly preparing their bids and constitute a part of the *Contract Documents* and shall be strictly complied with.

1. Definitions and Terms. See Article I, Section 3 of the General Contract Conditions in the *Standard Contract Documents for Capital Improvements Construction*.
2. Copies of Bid Documents. Complete sets of the *Bid Documents* may be reviewed at the Administration Office of the Department of Public Works and Utilities at City Hall, 250 North 5th Street, Grand Junction, Colorado 81501. Copies thereof may be obtained for the non-refundable sum stated in the Invitation to Bid.

Complete sets of *Bid Documents* shall be used in preparing Bids; neither City nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of *Bid Documents*.

City and Engineer in making copies of *Bid Documents* available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3. Prequalification of Bidders: Contractors submitting bids over \$50,000 must be prequalified in accordance with the City's "Rules and Procedures for Prequalification of Contractors." Application forms for prequalification are available at the Administration Office of the Department of Public Works and Utilities. Contractors who are currently prequalified with the Colorado Department of Transportation (CDOT) will meet the requirements for prequalification by the City, unless the City has information or basis to the contrary. Application forms for Contractor prequalification are available at the Administration Office of the Department of Public Works and Utilities, City Hall, 250 North 5th Street, Grand Junction, CO, 81501.
4. Liquidated Damages for Failure to Enter Into Contract. Should the Successful Bidder fail or refuse to enter into the Contract within ten Calendar Days from the issuance of the Notice of Award, the City shall be entitled to collect the amount of such Bidder's Bid Guaranty as Liquidated Damages, not as a penalty but in consideration of the mutual release by the City and the Successful Bidder of all claims arising from the City's issuance of the Notice of Award and the Successful Bidder's failure to enter into the Contract and the costs to award the Contract to any other Bidder, to re-advertise, or otherwise dispose of the Work as the City may determine best serves its interest.

5. Time of Completion. Time is of the essence with respect to the time of completion of the Project and any other milestones or deadline which are part of the Contract. It will be necessary for each Bidder to satisfy the City of its ability to complete the Work within the Contract Time set forth in the Contract Documents.
6. Examination of Contract Documents and Site. Before submitting a Bid, each Bidder shall:
 - a. Examine the *Contract Documents* thoroughly;
 - b. Visit the site to familiarize itself with local conditions that may in any manner affect cost, progress, or performance of the Work;
 - c. Become familiar with federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress or performance of the Work;
 - d. Study and carefully correlate Bidder's observations with the *Contract Documents*, and;
 - e. Notify the Engineer of all conflicts, errors, ambiguities or discrepancies in or among the *Contract Documents*

On request, the City will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of a Bid. It shall be the Bidder's responsibility to make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (including without limitation, surface, subsurface and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress or performance of the work and which the Bidder deems necessary to determine its Bid for performing the work in accordance with the time, price and other terms and conditions of the Contract Documents. Location of any excavation or boring made by Bidder shall be subject to prior approval of City and applicable agencies. Bidder shall fill all holes, restore all pavements to match the existing structural section and shall clean up and restore the site to its former condition upon completion of such exploration. The City reserves the right to require the Bidder to execute an access agreement with the City prior to accessing the site.

The lands upon which the Work is to be performed, rights of way, and access thereto, and other lands designated for use by Contractor in performing the Work, are identified on the Drawings.

Information and data reflected in the *Contract Documents* with respect to underground utilities at or contiguous to the site are based upon information and data furnished to the City and the Engineer by the owners of such underground utilities or others, and the City does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the *Contract Documents*.

By submission of a Bid, the Bidder shall be conclusively presumed to represent that the Bidder has complied with every requirement of these Instructions to Bidders, that the *Contract Documents* are not ambiguous and are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

7. Interpretations. All questions about the meaning or intent of the *Contract Documents* shall be submitted to the Purchasing Supervisor in writing.

Written comments or questions must be received by the Engineer at least forty-eight (48) hours (excluding Saturdays, Sundays, and Holidays) prior to the time set for Bid Opening.

If questions received by the Engineer or Purchasing Supervisor are deemed to be sufficiently significant and received sufficiently in advance of the Bid opening, an Addendum to the *Bid Documents* may be issued. Otherwise, a written copy of the question and decision or interpretation will be posted in the Engineer's office. It shall be the responsibility of each Bidder to make itself aware of all such posted questions and decisions or interpretations and, by submitting a Bid, each Bidder shall be conclusively be deemed to have such knowledge. After Bid Opening, all Bidders must abide by the decision of the Engineer as to all such decisions or interpretations. Bidders may not rely upon oral interpretations of the meaning of the plans, specifications or other bid documents and any oral or other interpretations or clarifications will be without legal force or effect.

8. Quantities of Work. Materials or quantities stated as unit price items in the Bid are supplied only to give an indication of the general scope of the Work. The City does not expressly or by implication agree that the actual amount of Work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any unit item of the Work without a change in the unit price except as set forth in Article VIII, Section 70 of the *General Contract Conditions*. The City also reserves the right to make changes in the Work (including the right to delete any bid item in its entirety or add additional bid items) as set forth in Article VIII, Sections 69 through 71 of the *General Contract Conditions*.

9. Substitutions. The materials, products and equipment described in the *Bid Documents* shall be regarded as establishing a standard of required performance, function, dimension, appearance, or quality to be met by any proposed substitution. No substitution will be considered prior to receipt of Bids unless the Bidder submits a written request for approval to the Engineer at least ten (10) days prior to the date for receipt of Bids. Such requests for approval shall include the name of the material or equipment for which substitution is sought and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for evaluation, including samples if requested. The Bidder shall set forth changes in other materials, equipment, or other portions of the Work including changes of the work of other contracts, which incorporation of the proposed substitution would require to be included. The Engineer's decision of approval or disapproval of a proposed substitution shall be final. If the Engineer approves a proposed substitution before receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

10. Bid Guaranty. Each Bid shall as a guaranty of good faith on the part of the Bidder be accompanied by a Bid Guaranty consisting of: a certified or cashier's check drawn on an approved national bank or trust company in the State of Colorado, and made payable without condition to the City; or a Bid Bond in the form set forth in the *Bid Documents* executed by an approved corporate surety in favor of the City. The amount of the Bid Guaranty shall not be less than 5% of the total Bid amount.

Once the City issues a Notice of Award, the apparent Successful Bidder has ten (10) Calendar Days to enter into a Contract in the form prescribed and to furnish the required Performance and Payment Bonds. Failure to do so will result in forfeiture of the Bid Guaranty to the City as Liquidated Damages.

Bid Guaranties for all except the three lowest qualified Bids shall be returned within five (5) Working Days of Bid Opening. When the Successful Bidder files satisfactory Performance and Payment Bonds and Certificates of Insurance, the Bid Guaranties of the three lowest Bidders shall be returned.

Each bidder shall guaranty its total bid price for a period of sixty-five (65) Calendar Days from the date of the bid opening. Except for forfeiture due to reasons discussed above, Bid Guaranties of all Bidders shall be returned to them within sixty-five (65) Calendar Days from the date of Bid Opening.

11. Bid Form. The Bid Form, provided by the City, must be completed in ink or by typewriter.

The Bidder shall specify a unit price in figures for each pay item for which a quantity is given and shall provide the products (in numbers) of the respective unit prices and quantities in the Extended Amount column. The total Bid price shall be equal to the sum of all extended amount prices. When an item in the Bid Schedule provides a choice to be made by the Bidder, Bidder's choice shall be indicated in accordance with the specifications for that particular item and thereafter no further choice shall be permitted.

Where the unit of a pay item is lump sum, the lump sum amount shall be shown in the "extended amount" column and included in the summation of the total Bid.

All blank spaces in the Bid Form must be properly filled out.

Bids by corporations must be executed in the corporate name by the president or vice president or other corporate office accompanied by evidence of authority to sign. The corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

The address to which communications regarding the Bid are to be directed must be shown.

12. Irregular Bids. A Bid will be considered irregular and may be rejected for the following reasons:

- a. Submission of the Bid on forms other than those supplied by the City;
- b. Alteration, interlineation, erasure, or partial detachment of any part of the forms which are supplied herein;
- c. Inclusion of unauthorized additions conditional or alternate Bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning;
- d. Failure to acknowledge receipt of any or all issued Addenda;
- e. Failure to provide a unit price or a lump sum price, as appropriate, for each pay item listed except in the case of authorized alternative pay items;
- f. Failure to list the names of Subcontractors used in the Bid preparation as required in the Bid Form;
- g. Submission of a Bid that in the opinion of the Purchasing Manager is unbalanced so that each item does not reasonably carry its own proportion of cost or which contains inadequate or unreasonable prices for any item;
- h. Tying of the Bid with any other bid or contract; and
- i. Failure to calculate Bid prices as described herein.

13. Submission of Bids. The completed Bid Form and Bid Guaranty shall be submitted at the time and place indicated in the Invitation to Bid and must be in a ten-inch by thirteen-inch opaque sealed envelope marked SEALED BID with the project title and the name and address of the Bidder.

Each Bidder submitting a sealed bid shall submit a second sealed envelope containing the following information:

- i. Equipment costs for the following items:
 - 1) Electric Switch Gear and Lighting
 - 2) Gas Compressor
 - 3) Gas Dryer/Filtration Unit
 - 4) Time Fill Assemblies

- ii. Minimum working experience including the following:
 - 1) Five (5) CNG Stations of similar size (up to 500 SCFM) within the past 3 (three) years.
 - 2) List of names and addresses for material suppliers for project being bid.

iii. Buy America Certification

This information shall be supplied at the time the bidder submits their bid for the project; in a ten-inch by thirteen-inch opaque sealed envelope marked MINIMUM WORK EXPERIENCE, EQUIPEMENT COSTS, & BUY AMERICA CERTIFICATION. The envelope shall also display the project title and the bidder name and address.

- 14. Modification and Withdrawal of Bids Before Opening. Bids may be modified or withdrawn by an appropriate document duly executed and delivered to the place where Bids are to be submitted at any time prior to Bid Opening.
- 15. Opening of Bids. Bids will be opened and read aloud at the time and place stated in the Invitation to Bid. All Bidders, their representatives, and other interested parties are encouraged to attend the Bid Opening.

Within five (5) Working Days after Bid Opening, all Bids will be tabulated and copies sent to all Bidders. The bid tabulation sheet(s) will be available to the public.

- 16. Disqualification of Bidders. A Bid will not be accepted from, nor shall a Contract be awarded to, any person, firm, or corporation that is in arrears to the City, upon debt or contract, or that has defaulted, as surety or otherwise, upon any obligation to the City, or that is deemed irresponsible or unreliable.

Bidders may be required to submit satisfactory evidence that they are responsible, have a practical knowledge of the project bid upon and that they have the necessary financial and other resources to complete the proposed Work.

Either of the following reasons, without limitation, shall be considered sufficient to disqualify a Bidder and Bid:

- a. More than one Bid is submitted for the same Work from an individual, firm, or corporation under the same or different name; and
 - b. Evidence of collusion among Bidders. Any participant in such collusion shall not receive recognition as a Bidder for any future work of the City until such participant has been reinstated as a qualified bidder.
- 17. Withdrawal of Bids After Opening. No Bid may be withdrawn by any bidder for sixty-five (65) Calendar Days after the Bid Opening.

18. Evaluation of Bids and Bidders. The City reserves the right to:

- reject any and all Bids,
- waive any and all informalities,
- negotiate final terms with the Successful Bidder, and
- disregard any and all nonconforming, nonresponsive or conditional Bids.

Discrepancies between words and figures will be resolved in favor of words. Discrepancies between Unit Prices and Extended Prices will be resolved in favor of the Unit Prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. The corrected extensions and totals will be shown in the tabulation of Bids.

The City may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must be submitted. Operating costs, maintenance considerations performance data, and guarantees of materials and equipment may also be considered by the City.

The City will conduct such investigations as deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the Work in accordance with the *Contract Documents* to the City's satisfaction within the Contract Time.

The Bidder shall furnish the City all information and data requested by the City to determine the ability of the Bidder to perform the Work. The City reserves the right to reject the Bid if the evidence submitted by, or investigation of such Bidder fails to satisfy the City that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

By submitting a Bid, each Bidder authorizes the City to perform such investigation of the Bidder as the City deems necessary to establish the responsibility, qualifications and financial ability of the Bidder and, by its signature thereon, authorizes the City to obtain reference information concerning the Bidder and releases the party providing such information and the City from any and all liability to the Bidder as a result of such reference information so provided.

The City reserves the right to reject the Bid of any Bidder who does not pass any evaluation to the City's satisfaction.

If the Contract is to be awarded, it will be awarded to the Bidder who, by evaluation, the City determines will best meet the City's interests.

The City reserves the right to accept or reject the Work contained in any of the Bid Schedules or alternates, either in whole or in part.

19. Award of Contract. Unless otherwise indicated, a single award will be made for all the bid items in an individual bid schedule. In the event that the Work is contained in more than one Bid Schedule, the City may award Schedules individually or in combination. In the case of two Bid Schedules which are alternative to each other, only one of such alternative Schedules will be awarded. Within forty-five (45) Calendar Days of Bid Opening, the City will issue a Notice of Award to the Successful Bidder which will be accompanied by four (4) unsigned copies of the Contract and the Performance and Payment Bond forms. Within ten (10) Calendar Days thereafter, the Successful Bidder shall sign and deliver four (4) copies of the Contract, Performance Bond, Payment Bond and Certificates of Insurance to the City. Within ten (10) Calendar Days thereafter, the City will deliver two (2) fully executed counterparts of the Contract to the Contractor. No contract shall exist between the Successful Bidder and the City and the Successful Bidder shall have no rights at law or in equity until the Contract has been duly executed by the City.

The Successful Bidder's failure to sign and submit a Contract and other documents set forth in this Paragraph within the prescribed time shall be just cause of annulment of the award, and forfeiture of the Bid Guaranty. The award of Contract may then be made to the next qualified Bidder in the same manner as previously prescribed.

20. Insurance. The Contractor shall secure and maintain such insurance policies as will provide the coverage and contain other provisions specified in the General Contract Conditions, or as modified in the Special Contract Conditions.

The Contractor shall file four (4) copies of the policies or Certificates of Insurance acceptable to the City with the Purchasing Supervisor within ten (10) Calendar Days after issuance of the Notice of Award. These Certificates of Insurance shall contain a provision that coverage afforded under the policies shall not be canceled unless at least thirty (30) Calendar Days prior written notice has been given to the City.

21. Sales and Use Taxes. The Contractor and all Subcontractors are required to obtain exemption certificates from the Colorado Department of Revenue for sales and use taxes in accordance with the provisions of the General Contract Conditions. Bids shall reflect this method of accounting for sales and use taxes on materials, fixtures and equipment.

22. Affirmative Action. In executing a Contract with the City, the Contractor agrees to comply with Affirmative Action and Equal Employment Opportunity regulations presented in the General Contract Conditions.

23. Preconstruction Meeting. Prior to the commencement of construction activities, a preconstruction meeting shall be held which shall include the Contractor, representatives of the City, utility companies and others effected by or involved in the project. Attendance by the Contractor is mandatory.

24. Pre-Bid Meeting. See the Special Conditions for details of pre-bid meeting (if any).

BID FORMS

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION

BID FORM
FOR
CNG Slow-Fill Station & Shop Bay Upgrades

TO: The City of Grand Junction
250 North Fifth Street
Grand Junction, Colorado 81501-2668

The undersigned Bidder, having thoroughly examined the Construction Drawings, Specifications, and other Bid Documents; having investigated the location of, and conditions affecting the proposed work, and being acquainted with and fully understanding the extent and character of the Work covered by this Bid; and all other factors and conditions affecting or which may be affected by the Work:

HEREBY PROPOSES and agrees, if this Bid is accepted, to enter into a Contract with the City on the form included in the *Contract Documents* and to furnish all required materials, tools, equipment, and plant; to perform all necessary labor and superintendence; and to undertake and complete the Work or approved portions thereof, in full accordance with and in conformity with the Construction Drawings, Specifications, and all other Contract Documents hereto attached or by reference made a part hereof, and for the following prices.

Bid Schedule: CNG Slow Fill Station & Shop Bay Upgrades

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
1	*SP	Packaged Compressor Unit	1.	Lump Sum	\$ _____	\$ _____
2	*SP	Natural Gas Dryer	1.	Lump Sum	\$ _____	\$ _____
3	*SP	Time Fill Post	10.	Each	\$ _____	\$ _____
4	*SP	Remote System Notification	1.	Lump Sum	\$ _____	\$ _____
5	*SP	Instrumentation & Controls, Piping/Tubing	1.	Lump Sum	\$ _____	\$ _____
6	*SP	Methane Detection System	1.	Lump Sum	\$ _____	\$ _____
7	*SP	Shop Bay Upgrades	1.	Lump Sum	\$ _____	\$ _____
8	*SP	Site Work	1.	Lump Sum	\$ _____	\$ _____
9	625	Survey	1.	Lump Sum	\$ _____	\$ _____
10	620	Portable Sanitary Facility	1.	Each	\$ _____	\$ _____
11	626	Mobilization	1.	Lump Sum	\$ _____	\$ _____
MCR		Minor Contract Revisions	1.	Lump Sum	\$25,000.00	\$ <u>25,000.00</u>

*SP = See Special Provisions

Bid Amount: \$ _____

The undersigned Bidder hereby agrees to execute the Contract in conformity with this Bid, to have ready and furnish the required Payment and Performance Bonds, executed by a Surety acceptable to the City and provide Certificates of Insurance evidencing the coverage and provisions set forth in Contract within ten (10) Calendar Days of the City's issuance of a Notice of Award.

The _____, a corporation of the State of _____, is hereby proposed as Surety on said Performance and Payment Bonds. If such Surety is not approved by the City, another and satisfactory Surety will be proposed.

Enclosed herewith is a Bid Guaranty as defined in the attached Instructions to Bidders in the amount of _____ which Bid Guaranty the undersigned Bidder agrees to be paid to and become the property of the City, as Liquidated Damages and not as a penalty should the Bid be accepted, the Contract Notice of Award issued, and should the Bidder fail or refuse for any reason to enter into the Contract in the form prescribed. The Bidder shall furnish the required Bonds and Insurance Certificates within ten (10) Calendar Days of issuance of the Notice of Award.

The following persons, firms or corporations are interested as joint ventures, partners or otherwise with the undersigned Bidder in this proposal:

Name: _____

Address: _____

Name: _____

Address: _____

If there are no such persons, firms or corporations, please so state in the following space. _____

The undersigned Bidder proposes to subcontract the following portion of Work:

<u>Name & address of Sub-Contractor</u>	<u>Description of work to be performed</u>	<u>% of Contract</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The undersigned Bidder acknowledges the right of the City to reject any and all Bids submitted and to waive informalities and irregularities therein in the City's sole discretion.

By submission of the Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to his own organization, that this Bid has been arrived at independently, without collusion, consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

The Work shall be completed within the Contract Time as specified in the Special Conditions.

Bidder hereby acknowledges receipt of Addenda Numbers: ____, ____, ____, ____.

By submission of a Bid, the Bidder shall be conclusively presumed to represent that the Bidder has complied with every requirement of the "Instructions to Bidders".

Bidder, by his signature hereon, hereby authorizes the obtaining of reference information containing the Bidder's qualifications, experience and general ability to perform the work and hereby releases the party providing such information and the City from any and all liability to Bidder as the result of such reference information being provided. Bidder further waives any right to receive copies of information so provided to the City.

Bidder agrees to perform all Work described in the Contract Documents for the unit prices or the lump sum as shown on the Bid Form, and acknowledges that the quantities shown on the Bid Schedule are approximate only and are intended principally to serve as guides for the purpose of comparing and evaluating Bids.

It is further agreed that any quantities of work to be performed at unit prices and material to be furnished may be increased or decreased as may be considered necessary in the opinion of the City, to complete the Work fully as planned and contemplated, and that all quantities of Work, whether increased or decreased, are to be performed at the unit prices set forth in the Bid, except as otherwise provided for in the Contract Documents.

It is further agreed that any lump sum prices may be increased to cover additional work ordered by the City, but not shown on the Plans or required by the Specifications, in accordance with the provisions of the Contract Documents. Similarly, they may be decrease to cover deletions of work so ordered.

By submitting a Bid, the Bidder acknowledges that the bid process is solely intended to serve the public interest in achieving the highest quality of services and goods at the lowest price, and that no right, interest or expectation shall inure to the benefit of the Bidder as the result of any reliance or participation in the process.

The undersigned Bidder further grants to the City the right to award this Contract on the basis of any possible combination of base bids and alternate(s) (if any) that best suit the City's needs.

Dated this _____ day of _____, 20__.

Bidder: _____

Address: _____

Signature: _____

Name printed: _____

Title: _____

If a corporation:

State of incorporation: _____

Attest: _____

(seal)

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

that we, _____ (___ an individual, ___ a partnership, ___ a corporation incorporated in the State of _____) as Principal, and _____ (incorporated in the State of _____) as Surety, are held and firmly bound unto the City of Grand Junction, Colorado, (hereinafter called "City") in the penal sum of _____ dollars (\$ _____), lawful money of the United States, for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that WHEREAS the Principal has submitted the accompanying Bid dated _____ for construction of _____ (the Project) for the City and

WHEREAS, the City has required as a condition for receiving said Bid that the Principal deposit with the City either a cashier's check or a certified check equivalent to not less than five percent of the amount of said Bid or in lieu thereof furnish a Bid Bond for said amount conditioned that in event of a failure to execute the proposed Contract for such construction and to provide the required Performance and Payment Bonds and Insurance Certificates if the Contract be awarded to the Bidder, that said sum be paid immediately to the City as Liquidated Damages and not as a penalty for the Principal's failure to perform.

NOW, THEREFORE, if the Principal shall, within the period specified therefore, on the attached prescribed forms presented to the Bidder for signature, enter into a written Contract with the City in accordance with said Bid as accepted, and give Performance and Payment Bonds with good and sufficient Surety, or Sureties, as may be required upon the forms prescribed by the City, for the faithful performance and the proper fulfillment of said Contract, provide Certificates of Insurance as required by said Contract, and provide all other information and documentation required by the Contract Documents, then this obligation shall be void and of no effect, otherwise to remain in full force and effect. In the event suit is brought upon this bond by the City and the City prevails, the principal and surety shall pay all costs incurred by the City in such suit, including reasonable attorneys' fees and costs to be fixed by the Court.

IN WITNESS WHEREOF, the above bound parties have executed this instrument under their several seals the name and corporate seal of each corporate party being hereto affixed and duly signed by its undersigned representative pursuant to authority of its governing board.

Dated this _____ day of _____, 20__.

Principal: _____

Address: _____

Signed: _____

(seal)

Title: _____

Surety: _____

Address: _____

Signed: _____

(seal)

Title: _____

INSTRUCTIONS FOR COMPLETING BID BOND

1. The full legal name and residence of each individual executing this Bond as Principal must be inserted in the first paragraph.
2. If the Principal is a partnership, the full name of the partnership and all individuals must be inserted in the first paragraph which must recite that individuals are partners composing the partnership, and all partners must execute the Bond as individuals.
3. The State of incorporation of each corporate Principal or Surety to the Bond must be inserted in the first paragraph and the Bond must be executed under the corporate seal of said party attested by its secretary or other appropriate officer.
4. Attach a copy of the power-of-attorney for the Surety's agent.

SPECIAL CONDITIONS

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION

CNG Slow-Fill Station & Shop Bay Upgrades

SPECIAL CONDITIONS

The performance of the Work for this Project shall conform to the General Contract conditions presented in the City of Grand Junction's *Standard Contract Documents for Capital Improvements Construction*, March 2010, except as specifically modified or supplemented herein or on the Construction Drawings.

- SC-1** **Project Description:** The project generally consists of the installation of 100 SCFM gas meter, 500 SCFM gas dryer, two -50 SCFM gas compressors (40 hp each), 10 – time fill dispenser hose drops, site grading, equipment pads, fencing/barricades, telephone system, associated electrical and gas plumbing, alarm system and associated appurtenances; Retrofitting two existing bay areas with; new partition wall & interior man door, explosion proof receptacles, gas detection alarm system, exterior bay door, motor operator(s), gas detection panels, combustible gas sensor, HVAC modifications, plumbing, associated work and appurtenances.
- SC-2** **Project Engineer:** The Project Engineer for the Project is Bret Guillory, who can be reached at (970) 244-1590 All notices, letters, submittals, and other communications directed to the City shall be addressed and mailed or delivered to:
- City of Grand Junction
Department of Public Works and Planning
Attn: Bret Guillory PE, Utility Engineer
250 North Fifth Street
Grand Junction, CO 81501
- SC-3** **Pre-Bid Meeting:**
There will be a pre-bid meeting for this project. The pre-bid meeting is not mandatory but attendance is strongly recommended. A pre-bid meeting will be held at 2:00 p.m. on Tuesday, July 13, 2010, in the Public Works and Planning Executive Conference Room, 250 North 5th Street.
- SC-4** **Affirmative Action:** The Contractor is not required to submit a written Affirmative Action Program for the Project.
- SC-5** **Time of Completion:** The scheduled time of Completion for the Project is **91 Calendar Days** from the starting date specified in the Notice to Proceed.

Completion is achieved when site clean-up and all punch list items (resulting from the final inspection) have been completed. Completion shall have the meaning set forth in Article I, Section 3 (Definitions and Terms) of the General Contract Conditions.

The anticipated schedule for the Project is as follows:

Bid Opening:	July 20, 2010
City Council approval:	August 2, 2010
Notice of Award:	August 3, 2010
Contractor delivers Contract, Bond and Insurance Cert.	August 9, 2010
Preconstruction meeting:	August 9, 2010
Begin work:	August 16, 2010
Final Completion:	November 15, 2010
• City observed holidays during construction period: Labor Day	September 6, 2010

SC-6 Liquidated Damages:

If the Contractor does not achieve Final Completion by the required date, whether by neglect, refusal or any other reason, the parties agree and stipulate that the Contractor shall pay liquidated damages to the City for each such day that final completion is late. As provided elsewhere, this provision does not apply for delays caused by the City. The date for Final Completion may be extended in writing by the Owner.

The Contractor agrees that as a part of the consideration for the City's awarding of this Contract liquidated damages in the daily amount of **\$500.00** is reasonable and necessary to pay for the actual damages resulting from such delay. The parties agree that the real costs and injury to the City for such delay include hard to quantify items such as: additional engineering, inspection and oversight by the City and its agents; additional contract administration; inability to apply the efforts of those employees to the other work of the City; perceived inefficiency of the City; citizens having to deal with the construction and the Work, rather than having the benefit of a completed Work, on time; inconvenience to the public; loss of reputation and community standing for the City during times when such things are very important and very difficult to maintain.

The Contractor must complete the Work and achieve final completion included under the Bid Schedule in the number of consecutive calendar days after the City gives is written Notice to Proceed. When the Contractor considers the entire Work ready for its intended use, Contractor shall certify in writing that the Work is substantially complete. In addition to the Work being substantially complete, Final Completion date is the date by which the Contractor shall have fully completed all clean-up, and all items that were identified by the City in the inspection for final completion. Unless otherwise stated in the Special Conditions, for purposes of this liquidated damages clause, the Work shall not be finished and the Contract time shall continue to accrue until the City gives its written Final Acceptance.

If the Contractor shall fail to pay said liquidated damages promptly upon demand thereof after having failed to achieve Final Completion on time, the City shall first look to any

retainage or other funds from which to pay said liquidated damages; if retainage or other liquid funds are not available to pay said liquidated damages amounts, the Surety on the Contractor's Performance Bond and Payment Bond shall pay such liquidated damages. In addition, the City may withhold all, or any part of, such liquidated damages from any payment otherwise due the Contractor.

Liquidated damages as provided do not include any sums to reimburse the City for extra costs which the City may become obligated to pay on other contracts which were delayed or extended because of the Contractor's failure to complete the Work within the Contract Time. Should the City incur additional costs because of delays or extensions to other contracts resulting from the Contractor's failure of timely performance, the Contractor agrees to pay these costs that the City incurs because of the Contractor's delay, and these payments are separate from and in addition to any liquidated damages.

The Contractor agrees that the City may use its own forces or hire other parties to obtain Substantial or Final Completion of the work if the time of completion has elapsed and the Contractor is not diligently pursuing completion. In addition to the Liquidated Damages provided for, the Contractor agrees to reimburse the City for all expenses thus incurred.

SC-7 **Working Days and Hours:** The working days and hours shall be as stated in the General Contract Conditions, Section VI, or as mutually agreed upon in the preconstruction meeting.

SC-8 **Permits:**
The following permits are required for the Project and will be obtained by the City at no cost to the Contractor:

- *None*

The following permits are required for the Project and shall be obtained and paid for by the Contractor, with the costs included in the total bid price for the Project:

- Mesa County Building Permit

SC-9 **Insurance Limits:** The minimum insurance limits for the Project are as stated in the General Contract Conditions.

SC-10 **City Furnished Materials:** The City will furnish the following materials for the Project:
AutoCAD site drawings, if necessary, for survey stake-out

SC-11 **Project Newsletters:** Project news letters will not be required for this project.

SC-12 **Project Sign:** Project signs, if any, will be furnished and installed by the City.

SC-13 **Authorized Representatives of the City:** Those authorized to represent the City shall include engineers and inspectors employed by the City, only.

SC-14 **Uranium Mill Tailings:** It is anticipated that radioactive mill tailings will not be encountered on this project.

SC-15 **Fugitive Petroleum or Other Contamination:** It is anticipated that soil contamination from fugitive petroleum or other contaminants will not be encountered with the Project.

SC-16 **Traffic Control:** The Contractor shall provide and maintain traffic control in accordance with the approved Traffic Control Plan and the *Manual on Uniform Traffic Control Devices*. The Contractor shall present the construction schedule and the traffic control plan at the preconstruction meeting for review and approval. The following guidelines and limitations shall apply to the traffic control:

Access from Riverside Parkway:

Signage in accordance with MUTCD shall be provided for truck access from the Riverside Parkway to the project site.

SC-17 **Work Location Schedules:**

1. The Contractor will be allowed to work on any day with exception of weekends or City observed holidays.

SC-18 **Stormwater Management Plan:**

Existing curbside storm drain inlet basins are located along the Riverside Parkway, each inlet that may receive storm water runoff from the disturbed site shall receive stormwater protection in the form of a “Silt Sack” or “Filter Sock” before digging in the area begins. The inlet basin stormwater protection devices shall remain in place until the Contractor has completed the site work operations and the street has been swept clean. The Contractor shall also be responsible for maintaining the inlet basin protection device throughout construction and periodically inspecting the inlet basin protection device during construction. In addition, after every rainfall and/or snowmelt event the Contractor shall inspect all inlet basin protection devices on the project. The Contractor shall be responsible for either cleaning or replacing the inlet basin protection device when the capacity of the protection device has reached 50% of its full capacity. The Contractor shall take into account the associated maintenance cost in the specific pay item.

Street sweeping shall be periodically completed in the traffic lanes where material from the construction site has been tracked by vehicles. The street sweeping machine shall be capable of both sweeping and vacuuming up the roadway dirt. A machine that only sweeps will not be accepted and will not be paid for. The Contractor shall submit for approval a description of the street cleaning machine to be used prior to cleaning the street. Street sweeping will be paid for by the hour as shown in the Bid Schedule.

The Contractor shall provide an acceptable method of mitigating sediment transport from excavation spoil piles in the event of a rainstorm and/or snow melt event.

All vehicle and equipment maintenance and fueling shall be performed in a designated area within the construction area that will not interfere with roadway

traffic operations unless traffic control is provided. The fueling area shall exhibit Best Management Practices in order to minimize and/or eliminate the potential of fuel spillage. Any spillage of fuel onto the ground shall be immediately cleaned up and any contaminated soil disposed of properly at the Mesa County Landfill. Documentation of spills, leaks and overflows that result in the discharge of pollutants, including logging and reporting of the spill is required to the Water Quality Control Division at their toll-free 24-hour environmental emergency spill reporting line – 1-877-518-5608.

The Contractor shall clear the site of all on-site waste daily, including scrap from construction materials.

Concrete trucks will be required to wash out in a portable concrete washout pool supplied by the Contractor or the concrete truck can wait to washout back at the concrete batching facility. The Contractor will be responsible for maintaining the washout pool. The washout pool shall be cleaned out and/or replaced when the washout pool reaches 50% of total capacity. The concrete washout pool needs to be dynamic and durable in its ability to be moved with the progress of construction.

The Contractor shall clear the site of all trash and litter daily. Portable toilets will be maintained (cleaned and emptied) by a local supplier.

SC-19 **Construction Equipment Storage:**

During construction the Contractor will be allowed to store construction equipment and/or construction materials within the fenced area adjacent to the site.

SC-20 **Schedule of Submittals:**

The Contractor shall provide these specific submittals at the preconstruction meeting:

- Hourly rate table for labor and equipment to be used on this project.
- Traffic Control Plan
- Construction Schedule
- Equipment – Electric Switch Gear, Lighting, Gas Meter, Compressor, Dryer/Filtration Unit, Time Fill Assemblies.
- Fittings/connectors
- Electrical Panel
- Concrete Washout Facility
- Base course gradation, Proctor Curve (Class 6)
- Concrete mix design, Class B

SC-21 **Discrepancy between Bid Schedule and Construction Notes:** In the event of a discrepancy between a Pay Item description in the Bid Schedule and the description for the same Pay Item in the drawings/construction notes; the language in the Bid Schedule shall govern or supersede that found elsewhere.

SC-22 **Existing Utilities and Structures:** The location of existing utilities and structures shown on the Plans are approximate. It is the responsibility of the Contractor to locate and protect all structures and utilities in accordance with General Contract Condition

Section 37. The Contractor shall coordinate with the utility companies any necessary relocation of utilities and schedule his work accordingly.

SC-23 **Incidental Items:** Any item of work not specifically identified or paid for directly, but which is necessary for the satisfactory completion of any paid items of work, will be considered as incidental to those items, and will be included in the cost of those items.

SC-24 **Buy America Requirement:** This project is being funded, in part, by EECBG (Energy Efficiency and Conservation Block Grant) through the American Recovery and Reinvestment Act of 2009 and is subject to the Buy American Requirement.

Buy American Requirement - Construction. ARRA §1605. All iron, steel and manufactured goods used in any ARRA Project for the construction, alteration, maintenance, or repair of a public building or public work shall be produced in the United States in a manner consistent with United States obligations under international agreements. This requirement can be waived only by the awarding Federal Agency in limited situations.

Bid must include a letter of certification that the goods and materials proposed for the project are in compliance with the Buy American provision of ARRA.

SC-25 **Davis-Bacon Wage Restrictions:** Davis Bacon wage restrictions will be required for this project. Wage rates will be based on;

General Decision Number CO100012, 06/04/2010, CO12 for Heavy construction,

General Decision Number CO100014, 06/04/2010, CO14 for Highway construction,

General Decision Number CO100007, 06/04/2010, CO7 for Building construction,

All three general decisions to be used by the Contractor are subject to approval by the Department of Labor.

SPECIAL PROVISIONS

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION

**CNG Slow-Fill Station & Shop Bay Upgrades
SPECIAL PROVISIONS**

GENERAL:

The descriptions of the pay items listed in the Bid Schedule for this Project may not agree with those listed in the Standard Specifications. Payment for all Work performed, as required in the Contract Documents, will be in accordance with the items and units listed in the Bid Schedule.

STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION:

The *City of Grand Junction Standard Specifications for Road and Bridge Construction* are hereby modified or supplemented for this Project by the following modifications to *The Standard Specifications for Road and Bridge Construction*, State Department of Highways, Division of Highways, State of Colorado:

SP-1 PACKAGED COMPRESSION UNIT

General:

Materials for the Natural Gas Compression Unit shall be as described in Section 2.2 of the Technical Specifications included in Appendix B, and appropriate plan sheets.

Method of Measurement – By Lump Sum

Basis for Payment - Includes all work and materials needed for installation of the natural gas packaged compression unit, electric motors, enclosure, system connections, required to provide a complete working unit as described in the Standard Contract Documents, Technical Specifications, and Project Plan Set.

SP-2 NATURAL GAS DRYER

General:

Materials for the Natural Gas Dryer Unit shall be as described in Section 2.3 of the Technical Specifications included in Appendix B, and appropriate plan sheets.

Method of Measurement – By Lump Sum

Basis for Payment - Includes all work and materials needed for installation of the natural gas dryer skid, molecular sieve, adsorption tower and filters, regeneration system, dewpoint

monitoring system, enclosure, and system connections required to provide a complete working unit as described in the Standard Contract Documents, Technical Specifications, and Project Plan Set.

SP-3 TIME FILL POSTS

General:

Materials for the Time Fill Posts shall be as described in Section 2.4 of the Technical Specifications included in Appendix B, and appropriate plan sheets.

Method of Measurement – By Each

Basis for Payment - Includes all work and materials needed for installation of the time fill posts, hose breakaways, twin-hose assembly, fueling nozzle, isolation and bleed valves, and system connections, required to provide a complete working unit as described in the, Standard Contract Documents, Technical Specifications, and Project Plan Set.

SP-4 REMOTE SYSTEM NOTIFICATION

General:

Materials for the Remote System Notification shall be as described in Section 2.5 of the Technical Specifications included in Appendix B, and appropriate plan sheets.

Method of Measurement – By Lump Sum

Basis for Payment - Includes all work and materials needed for installation of the auto dialer to allow remote notification of station shutdowns as described in the Standard Contract Documents, Technical Specifications, and Project Plan Set.

SP-5 INSTRUMENTATION & CONTROLS, PIPING / TUBING

Clarification:

Instrumentation and Controls, Piping / Tubing materials that are needed for various equipment shall conform to sections 2.6 and 2.7 of the Technical Specifications included in Appendix B, and as identified on appropriate Plan Sheets.

Method of Measurement – There will be no separate measurement for these items.

Basis for Payment - There will be no separate payment for these items. Payment shall be included in the other bid schedule items as applicable.

SP-6 METHANE DETECTION SYSTEM

General:

Materials for the Methane Detection System shall be as described in Section 16700 of the Technical Specifications included in Appendix B, and appropriate Plan Sheets.

Method of Measurement – By Lump Sum

Basis for Payment - Includes all work and materials needed for installation of the Methane Detection System for both the time fill station and shop bay upgrades to allow control of electrical components, and remote notification of station shutdowns as described or shown in the Standard Contract Documents, Technical Specifications, and Project Plan Set.

SP-7 SHOP BAY UPGRADES

General:

Materials for the modification to the existing shop bays shall be as described on the Plan Sheets and shall meet all requirements of the Mesa County Building Code, Technical Specifications included in Appendix B, and appropriate Plan Sheets.

Method of Measurement – By Lump Sum

Basis for Payment - Includes all work and materials needed for modification of the two shop bays including demolition of wall(s), installation of wall(s), Gas alarm Ventilation, installation of over head garage door(s) and motor(s), man door, motor operators for doors, demolition of existing Unit Heaters (deliver removed units to city), connection to the Methane Detection System, and all other; Electrical, HVAC, Plumbing modifications as described or shown in the Standard Contract Documents, Technical Specifications, and Project Plan Set.

SP-8 SITE WORK

General:

Materials for the site work shall be as described on the Plan Sheets and shall meet all requirements of the Mesa County Building Code, City of Grand Junction Standard Contract Documents, Technical Specifications included in Appendix B, and appropriate Plan Sheets.

Method of Measurement – By Lump Sum

Basis for Payment - Includes all work and materials needed for grading, concrete flat work, fencing, barricades, bollards, gates, light poles & luminaires, motion lights, outlets, conduits, distribution gear, electrical panels, described or shown in the Standard Contract Documents, Technical Specifications, and Project Plan Set.

STANDARD SPECIFICATIONS FOR CONSTRUCTION OF WATER LINES, SANITARY SEWERS, STORM DRAINS, UNDERDRAINS AND IRRIGATION SYSTEMS

The City of Grand Junction *Standard Specifications for Construction of Water Lines, Sanitary Sewers, Storm Drains, Underdrains and Irrigation Systems* are hereby modified for this Project as follows:

No Change

Appendix A
Project Submittal Form

PROJECT SUBMITTAL FORM

PROJECT: CNG Slow-Fill Station & Shop Bay Upgrades

CONTRACTOR:

Project Engineer: Bret Guillory

Description	Date Received	Re-submittal Requested	Re-submittal Received	Date Accepted
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SITE CONSTRUCTION

Base course gradation, Proctor curve (Class 6)				
Concrete mix design, Class B				

COMPRESSOR, DRYER, METERING & FILL STATION CONSTRUCTION

Gas Dryer/Filtration Unit				
Gas Compressor Unit				
Gas Meter				
Gas Dispensing Equipment				
Bill of Materials				
Gas Detection Control System				
Overhead & Man Doors				
Motors/ Operators for Overhead Door				
Conduit materials (all sizes)				

EROSION CONTROL / STORMWATER MANAGEMENT

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Inlet Basin Protection				
Concrete Washout				
PERMITS, PLANS, OTHER				
Traffic Control Plan(s)				
Mesa County Building Permit				

Appendix B

Technical Specifications

TECHNICAL SPECIFICATIONS FOR
**CNG SLOW – FILL
STATION & SHOP BAY
UPGRADES**
MUNICIPAL SERVICE CENTER
CITY OF GRAND JUNCTION, COLORADO

PREPARED BY:

Raymundo Engineering Company, Inc.
390 N. Wiget Lane, Suite 150
Walnut Creek, CA 94598

June 8, 2010

SECTION 08331

GARAGE DOOR MOTOR OPERATORS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Provide motor operators to existing garage doors as shown on drawings. Operators shall be suitable for Class 1, Division 2 areas. Operators shall be activated by new manual open-close-stop push-buttons or upon gas detection. Service and repair doors as required for proper operation.
- B. Provide explosion–proof electrical sensing system, with cord reel, to the bottom edge of door to sense obstruction and signal the motor operator to stop and open the door. The sensing device for entrapment protection (safety edge type) shall meet current codes.

1.2 SUBMITTALS

- A. Shop drawings and manufacturer's data: Submit shop drawings showing general arrangement and details of mounting electrical connections, installation details.
- B. Operation and maintenance data including instructions on installation, operations, maintenance, pulley adjustment, safety information, cleaning, troubleshooting guide, parts list, warranty, and electrical wiring diagrams. The manual shall include a preventive maintenance program that lists maintenance tasks and their frequency for proper maintenance of the garage door motor operators and safety edge systems.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer, material, products included, and location of installation.
- B. Storage: Store materials in a dry area indoor, protected from damage, and in accordance with manufacturer's instructions. For long term storage follow manufacturer's Installation, Operations, and Maintenance Manual.
- C. Handling: Handle and lift motor operators in accordance with the manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage. Follow all safety warnings posted by the manufacturer.

1.4 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
- B. The warranty of this equipment is to be free from defects in material and workmanship for a period of one year from Owner's acceptance of the Project. Any units or parts which prove defective during the warranty period will be replaced at the Manufacturers option when returned to Manufacturer, transportation prepaid.

PART 2 – PRODUCTS

2.1 ACCEPTABLE SUPPLIERS

- A. Overhead Door Company
- B. Or approved equal

2.2 MOTOR OPERATING MECHANISM

- A. Motor operator shall be UL listed operator suitable for use in Class 1, Division 2 areas. Operator shall have a floor level disconnect with electrical interlock for manual chain hoist operation. Operator shall also have full overload protection, heavy duty reversing controller, electric solenoid brake, right or left-hand vertical mount (Owner shall specify mounting side), and gear type power train assembly.
- B. Motors shall be continuous duty, high starting torque, instant reversing commercial door operator designed for use with heavy duty rolling doors. Motor voltage shall be as shown on the drawings.
- C. Door operator shall be activated either by manual push button station or automatically by gas detection.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. The contractor shall install motors and door safety systems complete with necessary hardware and specific features to effectively open and close openings; use competent mechanics skilled in overhead coiling door installation, and work under direct supervision of door manufacturer's authorized representative in accordance with manufacturer's instructions; adjust each door for smooth operation; and lubricate all parts requiring lubrication. A retractable cord reel shall be used to restrain and protect the control line for the safety edge system.

- B. The Contractor shall return three months and twelve months after installation of the door motor operators to readjust each door system for smooth operation and to lubricate all parts requiring lubrication.

END OF SECTION

DIVISION 9 - FINISHES

SECTION 09910 - PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. These specifications include painting above ground bare metal surfaces (except stainless steel) such as station piping, supports, and vents.

1.2 COLORS AND SAMPLES SUBMITTAL

- A. Samples: Before beginning work, prepare for Owner's approval a sample of each color and finish required. Such approved samples shall constitute standards for color and finish for acceptance or rejection of completed work. All work shall match the approved colors and samples.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Manufacturers: Materials are specified by brand names to establish a standard of quality, or by performance requirements, appearance, and general description of product. Materials shall be Fuller-O'Brien, Kelley-Moore, Glidden, or equal. The term "paint" as used herein includes enamels, paints, stains, varnishes, emulsions, lacquers and sealers. The term "painting" as used herein means the application of such materials.
- B. List of Materials: Submit a complete list of all materials proposed for use, together with manufacturer's specifications.
- C. Unsuitability of Specified Products: No claim by the Contractor concerning the unsuitability of any material specified or inability to produce first class work with same will be entertained unless such claim is made in writing to the Owner's Representative before the work is started.
- D. Color and Life of Film: Colors of all surfaces finished under this section shall, at the end of one (1) year, have remained free from serious fading, and variations, if any, shall be uniform. All materials shall have their original adherence at the end of one (1) year and there shall be no evidence of blisters, running, peeling, scaling, chalking, streaks or stains at the end of this period. Washing with alkali-free soap and water shall remove surface dirt without producing any deteriorating effects.

- E. All paint and priming products, whether shop or field applied, shall be lead, chromium, and cadmium free. In addition, these products and all other material used shall comply with local, regional, state, and Federal air quality rules.

PART 3 - EXECUTION

3.1 DELIVERY AND STORAGE

- A. All painting materials shall be delivered to the site in the manufacturer's original containers with labels intact and seals unbroken. They shall be kept in a locked, well-ventilated storage place assigned for this purpose. Receiving, opening, and mixing of all paint materials shall be done in this room. Storage space shall be kept clean and neat. Oily rags shall be removed and disposed of each day and all other necessary precautions shall be taken to avoid danger of fires.

3.2 WEATHER AND TEMPERATURE

- A. Surfaces shall be painted only when they are free from moisture. No painting on exterior surfaces shall be done less than 72 hours of actual drying weather after a rain, nor during periods of dew or fog. Receiving surfaces shall be properly dried out before proceeding with the work. No painting shall be done when temperature is below 50°F, except when specifically directed otherwise in writing by the Owner's Representative. Clear sealer shall not be applied when air temperature is less than 70°F.

3.3 SCAFFOLDING, DROP CLOTHS AND PROTECTION OF WORK

- A. Furnish, maintain and remove all scaffolding, ladders and planks required for this work and all drop cloths for the protection of concrete walks, floors, prefinished materials, fixtures, etc. Painted and finished surfaces subject to damage or defacement due to other work shall be properly protected and covered. Contractor shall be responsible for any and all damage to painted work and to that of other work caused by operations under this section.

3.4 PREPARATION OF SURFACES

- A. No painting or finishing shall be started until the surfaces to be painted or finished are in proper condition in every respect. Surfaces that cannot be properly prepared for finishing shall not be painted or finished until they are rectified, unless otherwise instructed by the Owner's Representative.
- B. Surfaces to be painted shall be clean and free of dirt, dust and any other substances which might interfere with the functioning of the painting

system. All surfaces to be painted shall be in proper condition to accept and assure the proper adhesion and functioning of the particular painting system or coating specified. Concrete surface shall be hydroblasted prior to painting.

- C. All steel and ferrous metal surfaces to be painted shall be primed before installation. Bolts, welds and places prime coat has been damaged shall be wire-brushed to remove all loose paint, rust and scale and then given one (1) coat of Ferrous Metal Primer.
- D. Prime coats and finish coats for any one paint system shall be the products of the same manufacturer.
- E. All surface defects and all cracks more than 1/16-inch wide shall be filled to match adjacent areas.

3.5 WORKMANSHIP AND APPLICATION

- A. All painting shall be done by skilled and experienced personnel. All workmanship shall be of the highest quality and to the complete satisfaction of the Owner's Representative.
- B. All materials shall be applied in accordance with the manufacturer's directions, and materials shall be thinned only for proper workability and in compliance with the manufacturer's specifications. All material shall be evenly brushed or smoothly flowed on without runs or sagging and free from drips, ridges, laps and brush marks. Insure that all coats are thoroughly dry before applying succeeding coats. Sand surfaces between coats as necessary to produce a smooth finish.
- C. Painting shall include all exposed surfaces of every member. Parts to paint, which are inaccessible after installation, shall be painted before installation. Priming shall include all sides, edges and cut ends.
- D. Completed painted surfaces shall be free of blistering, running, peeling, scaling, streaks and stains and the colors of all surfaces shall remain free from fading.
- E. Spray painting is not permitted unless prior written approval by the Owner's Representative is obtained.

3.6 EXTERIOR PAINTING

A. Bare Metal Surface

Prime Coat: Metal primer (1 coat)

Finish Coat: Alkyd Enamel, Semi-Gloss (2 coats)

3.7 APPROVAL OF FINAL COLORS AND FINISHES

- A. Final coat of paint shall not be applied until the colors and finishes have been approved by the Owner's Representative.

3.8 CLEANING AND TOUCH-UP

- A. Upon completion of the painting work, Contractor shall remove from the premises and dispose of all scaffolding and equipment, surplus material, empty containers, and other debris resulting from these operations. The station and surrounding areas shall be left clean and neat in all respects.
- B. Contractor shall clean and retouch this work as necessary for a first class job acceptable to the Owner's Representative.
- C. Contractor shall leave all floors and walks, hardware, and any other surfaces clean and free from any paint, spattering, smears, or smudges which are the result of this operation.

3.9 WEATHERING OF EXTERIOR WORK

- A. The Contractor shall give special attention to the quality of exterior paints and their application, insuring that weathering of such work shall not cause dripping, bleeding, running, leeching, or any other such undesirable effects which cause staining and defacement of adjacent surfaces.

3.10 MAINTENANCE SUPPLIES

- A. Furnish Owner with one (1) gallon of each kind and color of finish coats used in the project. Furnish such paint in fully labeled and identified one (1) gallon containers as necessary to make a thoroughly complete job in every respect.

END OF SECTION

DIVISION 11 - EQUIPMENT

SECTION 11500 - CNG VEHICLE FUELING EQUIPMENT

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. This specification covers design, manufacture, and delivery of compressed natural gas (CNG) vehicle fueling equipment. The fueling equipment shall be packaged in a small footprint and use reliable components to reduce possible downtime. The CNG fueling system shall consist of, but not be limited to, the following:
1. Dual compressor with electric motor drives and sound attenuating enclosure. The compressors shall be equipped with the following: closed-loop gas recovery system with an ASME-rated tank, electric motors, inlet and outlet coalescing filters, automatic condensate drain system, safety controls, and control panel with PLC.
 2. One single tower gas dryer with onboard regeneration system.
 3. Ten CNG time-fill posts including hose breakaways and fueling nozzles.

1.2. CODES AND STANDARDS

- A. All equipment and the entire packaged fueling system shall comply with the latest revisions of applicable codes and standards. All materials shall be new (i.e., not previously used and manufactured within six months of equipment delivery). As a minimum, the equipment shall comply with the latest edition of the following codes and standards in effect at the time of bid:
1. American National Standards Institute (ANSI)
 - a. ANSI/NGV 1, Standard for Compressed Natural Gas Vehicle Fueling Connection Devices
 - b. ANSI/NGV 4.1, NGV Dispensing Systems
 - c. ANSI/NGV 4.2, Hoses for Natural Gas Vehicles and Dispensing Systems
 - d. ANSI/NGV 4.4, Breakaway Devices for Natural Gas Dispensing Hoses and Systems
 - e. ANSI/NGV 4.6, Manually Operated Valves for Natural Gas Dispensing Systems
 - f. ANSI/NGV 4.7, Automatic Pressure Operated Valves for Natural Gas Dispensing Systems

- g. ANSI/NGV 4.8, NGV Fueling Station Reciprocating Compressor Guidelines
 - h. ANSI Z535.2, Environmental and Facility Signs
2. American Petroleum Institute (API)
 - a. API Recommended Practice 520 – Sizing, Selection, and Installation of Pressure Relieving Devices in Refineries
 3. American Society of Mechanical Engineers (ASME)
 - a. Boiler and Pressure Vessel (B&PV) Code
 - i. Section V - Nondestructive Examination
 - ii. Section VIII, Division I - Pressure Vessels
 - iii. Section IX - Welding and Brazing Qualifications
 - b. ASME A13.1, Scheme for the Identification of Piping Systems
 - c. ASME B16.25, Buttwelding Ends
 - d. ASME B31.1, Power Piping
 - e. ASME B31.3, Process Piping
 4. American Society for Nondestructive Testing (ASNT)
 - a. SNT-TC-1A Recommended Practice
 5. American Welding Society (AWS)
 - a. A5.1 Covered Carbon Steel Arc Welding Electrodes
 - b. A5.5 Low Alloy Steel Covered Arc Welding Electrodes
 6. International Code Council (ICC)
 - a. International Building Code (IBC)
 - b. International Fire Code (IFC)
 - c. International Mechanical Code (IMC)
 - d. International Plumbing Code (IPC)
 7. National Fire Protection Association (NFPA)
 - a. NFPA 52 Vehicular Gaseous Fuel Systems Code
 - b. NFPA 54 National Fuel Gas Code
 - c. NFPA 70 National Electrical Code (NEC)
 - d. NFPA 704 Identification of the Hazards of Materials for Emergency Response
 8. Society of Automotive Engineers (SAE)

- a. J1616 Recommended Practice for CNG Vehicle Fuel
9. Underwriters Laboratories Inc. (UL)
- a. UL 508 Industrial Control Equipment
 - b. UL 508A Industrial Control Panels
 - c. UL 1604 Electrical Equipment for Use in Class I and II, Division 2, and Class III Hazardous (Classified) Locations
10. U.S. Department of Labor (OSHA)
- a. Title 29 CFR Part 1910 - Occupational Health and Safety Standards
11. U. S. Department of Transportation (DOT)
- a. Title 49 CFR Part 192 - Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards

1.3. QUALITY ASSURANCE

- A. All equipment shall be permanently affixed and accessible for maintenance and operation in accordance with all code requirements. Supports for all equipment shall conform to seismic requirements.
- B. The Contractor shall notify the Owner's Representative no later than 10 working days prior to factory testing of the compressor systems to allow the Owner's Representative the option to witness the test prior to shipment. Witnessing of the testing does not relieve the Contractor of the responsibility to comply with the specifications.
- C. All paint and priming products, whether shop or field applied shall be lead, chromium, and cadmium free. In addition, these products and all other materials used shall comply with local, regional, state and federal air quality rules and regulations, especially those of the local air quality management district.
- D. All materials and surfaces exposed to the exterior, unless otherwise pre-finished or otherwise treated with a corrosion-resistant finish, shall receive a three-coat shop-applied paint system.
- E. The CNG compressor including control system and dryer (dew point meter) shall be factory-inspected and certified by a Nationally Recognized Testing Laboratory for compliance with NFPA 52, NFPA 70, UL508, UL508A and UL1604 or equal. Certification by the third party inspection

firm shall be evidenced by the submittal of the inspection report and the application of a sticker on the equipment.

1.4. SUBMITTALS

- A. Within four (4) weeks of receipt of the Notice to Proceed, submit four copies of the following drawings and data for review. Submittal drawings and data shall be certified by the respective equipment manufacturer that the drawing(s) and data accurately represent the final product/system in all respects.
 - 1. For each equipment system or assembly: general arrangement drawing, process and instrumentation diagram, mechanical fabrication/assembly drawing, electrical elementary diagram, wiring diagram, electrical control assembly drawing, and installation instructions. Equipment arrangement drawings shall clearly identify the precise location, number, and size of customer connections, weight of equipment, and anchor bolt size and pattern for attachment of equipment to foundation.
 - 2. Station/compressor unit controller ladder logic diagrams.
 - 3. Mechanical and electrical bills of material.
- B. No fabrication or material purchase shall start until drawings are reviewed and accepted by the Owner's Representative. Individual equipment systems may be released for fabrication upon Owner's Representative's acceptance of their corresponding, certified shop drawings.
- C. Submit equipment record drawings as described in Article 3.3
- D. Submit operating and maintenance manuals as described in Article 3.4.

1.5. PROJECT CONDITIONS

- A. Natural Gas
 - 1. Specific Gravity : 0.6
 - 2. Temperature : 40-60°F
 - 3. Heating Value : 950 – 1,100 BTU/SCF
 - 4. Moisture Content : 7 lb/MMSCF max.
 - 5. Typical Gas Composition : 93% C₁

- : 4% C₂
- : 1% C₃ +
- : 1% N₂
- : 1% CO₂

(Note: Actual gas composition may vary)

- 6. Gas Pressure at Station Inlet : 25 psig

B. Electric Service

- 1. The new switchboard shall serve the electrical power requirements of the compressor and dryer systems. Motor loads for the compressor and dryer systems shall be designed based on 480 VAC, 3-phase, 60 hertz service.

C. Design Conditions

- 1. Site Conditions:
 - a. Elevation : 4,600 ft amsl
 - b. Ambient Temperatures : 20-110 °F
- 2. Maximum Station Inlet Piping Pressure Drop : 1 psi
- 3. Compressors:
 - a. Inlet Gas Pressure : 20 psig
 - b. Discharge Gas Pressure : 4,500 psig
 - c. Number of Compressors : 2
 - d. Design Gas Flow Rate ea Compressor : 56 scfm
 - e. Total Compression Capacity : 116 scfm
- 4. Dryer System:
 - a. Inlet Gas Moisture Content : 7 lb./MMSCF (max)
 - b. Outlet Gas Moisture Content : 0.25 lb./MMSCF or less
 - c. Minimum Thru-put : 500 scfm
 - d. Inlet Gas Pressure : 25 psig
 - e. Maximum Pressure Drop : 4 psi
 - f. Minimum Desiccant Charge : 650 lbs
- 5. All equipment and structures shall be designed, fabricated, and supported to comply with the latest edition of the International Building Code including seismic requirements.

PART 2 - PRODUCTS

2.1. GENERAL

- A. The fueling equipment shall be designed for continuous operation and shall meet vehicle fueling needs upon user demand around the clock. The operation of the fueling system shall be automatic (shall start-up and stop automatically) with provisions for manual operation/intervention. In the event of an alarm or emergency shutdown, on-site manual intervention shall be required to reset the compressor.
- B. All materials shall be non-combustible or fire-rated.
- C. Sufficient access shall be provided to perform major work on the compressor, including the removal of driver. All electric panels shall have the necessary clearances in front of openings as required by code. Sufficient access may be provided by removal of all or part of the compressor enclosure(s).
- D. All equipment mounting shall comply with design requirements of appropriate sections of IBC and seismic requirements. Equipment skids and mounts shall be of welded steel construction and shall have lifting lugs. Skids and equipment mounts shall accommodate anchoring to a concrete foundation using an adhesive-filled, drilled in-place anchor system.
- E. All gas containing components shall be protected by pressure relief valves set at or below each component's maximum allowable working pressure.
- F. All electrical controls shall be pre-wired to a single terminal strip in a junction box. The terminal strip shall be clearly labeled, ready for field termination. The junction box shall have skid edge conduit connections.
- G. All drain connections shall be piped to the skid edge and plugged.
- H. Gas inlet and outlet lines shall be terminated at the skid edge.
- I. All non-stainless steel components shall be primed and painted.

2.2. PACKAGED COMPRESSION UNIT

- A. Natural Gas Compressor System
 - 1. Acceptable Packager/Manufacturer Team:
 - a. Ingersoll-Rand
 - b. Or approved equal

2. The system shall be a self-contained electric-driven package, consisting of two electric motor driven compressors, controls, auxiliary systems, and safety devices. The compressor shall be designed specifically to compress natural gas. No converted gas engine or air compressor shall be used.
3. Compressor shall have individually flanged bolted compression and guide cylinders to facilitate servicing the cast-iron piston rings on all four stages.
4. Compressor shall be designed for smooth operation by the aluminum double-acting piston on the first and second stages balancing with the third stage steerable piston and fourth stage self-aligning piston.
5. Splash lubrication shall be provided with a low crankcase oil level switch.
6. A thermostatically controlled crankcase heater shall maintain the correct oil viscosity.
7. Compressor shall have single piece connecting rods, mechanical oil seal on drive shaft, and a precision balanced overhung crankshaft with replaceable crankpin bushing.
8. Air cooled finned tube intercoolers and aftercooler shall be provided.
9. Compressor inlet train shall include pulsation tank, coalescing filter, solenoid valves, and individual manual isolation valves. Discharge train shall include coalescing filter.
10. The closed loop recovery system shall include an ASME rated tank, ASME relief valve, pressure gauge, and manual drain valve.
11. Compressor system shall have an automatic condensate drain system collected by separators. Condensate shall drain into the recovery tank.
12. Electric shutdown controls shall be provided for the following: low/high inlet pressure, high discharge pressure, discharge control pressure, high fourth stage discharge temperature, excessive motor starts, low crankcase oil level, main motor/starter overload, emergency shutdown switch.

13. A Frank W. Murphy Mfr or approved equal CNG Level II control panel shall be provided for automatic start/stop operation with alternating lead/lag control. Control panel shall be weather-tight and suitable for use in Class 1, Division 2, Group D locations. Control panel shall include an LCD annunciator panel and switchgauges.
14. Locations of gas inlet and outlet connections shall be as shown in the Owner's station design drawings.

C. Electric Motors

1. Motor shall be 460VAC, 3 phase, 60 Hz, totally enclosed fan cooled, and suitable for use in Class 1, Division 2, Group D locations.
2. Each motor shall have V-belt drive, belt tightener, full-voltage motor starter, and totally enclosed metal belt guard with antistatic belts.

D. Enclosure

1. A totally enclosed weather-proof and sound attenuating metal enclosure accessible from all sides by means of lockable hinged and removable doors shall be provided. All materials shall be non-combustible or fire-rated materials. Exterior surface shall be finished with the manufacturer's recommended coating system.
2. A gas detection sensor shall be provided to initiate an alarm at 25% LEL and a station emergency shutdown at 50% LEL. Acceptable gas detection manufacturers are:
 - a. Sierra Monitor
 - b. Or approved equal

E. Additional Requirements

1. Refer to Articles 2.6 and 2.7 for additional requirements for piping/tubing and instrumentation/controls, respectively.

2.3. NATURAL GAS DRYER

A. Acceptable Manufacturer:

1. Xebec
2. Or approved equal

B. The natural gas dryer shall be a skid-mounted single-tower dryer with a regenerative system. Dryer shall be sized for the quoted capacity with the gas analysis and process conditions specified in Article 1.5, Paragraphs A and C.

C. Molecular Sieve

1. Adsorbent shall be molecular sieve 3A with a minimum life of 5 years. The tower shall be loaded with a minimum of 650 pounds of desiccant.
2. The sieve shall minimize adsorption or desorption of odorants, CO₂, H₂S, and other components or trace elements from natural gas.

D. Adsorption Tower and Filters

1. The dryer shall consist of a single tower with a regenerator. Dryer shall be located on the suction side of the compressor. Pressure drop across the dryer skid (between the skid inlet and outlet flange connections) shall not exceed 4 psi. Skid isolation and bypass valves shall be provided and shall be ball valves. The inlet and outlet skid connections shall be 3" rated ANSI 150 flanges. Piping system including welding shall be in accordance with either ASME B31.1 Power Piping or ASME B31.3 Process Piping.
2. The adsorption tower shall be rated at 150 psig and 500°F. The tower shall have a safety relief valve with appurtenances to allow for testing. Contractor shall submit calculation on relief valve sizing for review and acceptance prior to purchase. The tower shall be fitted with desiccant fill and drain ports to allow desiccant transfer without disassembling piping. Locally-mounted adsorption tower pressure and differential pressure gauges shall be provided.
3. A coalescing filter shall be provided for the adsorption tower inlet. The filter shall be sized to capture liquid slugs and capture aerosol and solid particles greater than 0.01 micron (Grade XP). The filter shall be equipped with a differential pressure indicator and manual liquid drain to a common drain. A particulate filter rated for 1 micron (Grade ZHTNX) shall be provided for the adsorption tower outlet. A differential pressure indicator shall be provided. Filters shall possess ASME rating or Canadian Registration Number approval. Both filters shall allow replacement of the filter element without removing the filter from the piping.

E. Regeneration System

1. Operator-attended regeneration shall be manually initiated by a panel-mounted push button after the manually operated isolation valves are correctly positioned. The regeneration time shall be approximately six hours. Regeneration gas flow shall be in a downward direction through the desiccant bed. The regeneration system shall comprise a blower, low-Watt regeneration heater, cooler, separator and accumulator tank as well as related piping, wiring and controls.
2. The gas blower shall be a vane- or lobe-type with an electric motor rated in accordance with NFPA 70. Blower/motor shall be installed in an ASME "U" or "UM" stamped carbon steel pressure vessel with the same pressure rating as the dryer vessel. The horizontal blower bell housing shall be fitted with stainless steel glides mating stainless steel runners fitted to the support skid to permit removal from the blind flange with minimal effort by one person. Suitable anchoring of the blower housing shall be provided to support the blower housing once installed.
3. The gas heater shall use incoloy sheathed, low-Watt-density electric heating elements mounted inside an insulated heating chamber. The heater bundle shall be furnished with a thermocouple and temperature switch for heater sheath over-temperature alarm and shutdown. A heater high outlet temperature switch shall be furnished at the heater outlet. The heater vessel shall be an ASME "U" or "UM" stamped carbon steel pressure vessel with the same pressure and temperature rating as the desiccant chamber.
4. An air-to-gas fin tube aftercooler complete with electric motor and non-sparking fan blades with motor in compliance to Class 1, Div. 2, Group D electrical class shall be provided. A high-efficiency coalescing-separator with two-piece aluminum bowl and head construction shall be provided. It shall include a carbon steel condensate reservoir and a manual drain valve piped to the skid edge. The reservoir shall have a liquid capacity for at least two regeneration cycles.

F. Dewpoint Monitoring

1. The dewpoint monitoring system shall generate alarm signals when the dew point at the dryer outlet begins to deteriorate. The first alarm set point shall indicate the dryer outlet dew point has started to deteriorate. The second alarm set point shall indicate the need for regeneration of the system. The dryer outlet dewpoint shall be presented on the NEMA 4 panel text display.

G. Additional Requirements

1. A 3/8" stainless steel tubing run shall be provided at the dryer to supply power gas to operate the pneumatic actuator on the station inlet shutoff valve located upstream of the dryer. Activation of the station emergency shutdown system shall close the shutoff valve. Tubing shall be run to skid edge.
2. System shall be pressure and functionally tested at the factory.
3. Refer to Articles 2.6 and 2.7 for additional requirements related to instrumentation/controls and piping/tubing, respectively.

2.4. TIME FILL POSTS

A. General

1. Provide ten (10) time-fill posts. Each post shall include a manually operated isolation valve, bleed valve, breakways (one on each hose), dual fill hoses, hose retractor, and fill nozzle.

B. Fill Post Requirements

1. Post shall be 2"x2" steel tube. Vent gas shall exit at the top of the post. Top of installed post shall be a minimum of ten (10) feet above grade.
2. Hose breakaways for CNG supply and vent lines shall be in-line type.
3. Twin-hose assembly (supply and vent hoses) shall be rated at 5,000 psig and shall be electrically conductive. Hose assembly shall be a minimum 20 feet in length. Hoses shall be distinctly marked either by the manufacturer's permanently attached tag or by distinct markings indicating the manufacturer's name or trademark, natural gas service, and working pressure.
4. Fueling nozzle shall be a 3,600 psig Type 2, NGV-1 compatible coupling by Staubli or approved equal.
5. Point of connection to each fill post shall be 3/8" stainless steel tubing. Each post shall include a manually operated isolation and bleed valves.

2.5 REMOTE SYSTEM NOTIFICATION

- A. An autodialer shall be provided to allow remote notification of station shutdowns. Autodialer shall be as specified in Specification Section 16700.

2.6 INSTRUMENTATION AND CONTROLS

- A. All pressure gauges shall conform to the following requirements:
 - 1. All gauges shall read at least 1.2 times the system design pressure (NFPA 52).
 - 2. Accuracy, including hysteresis, shall $\pm 0.5\%$ of full scale or better.
 - 3. Rear blowout protection shall be provided.
 - 4. All gauges shall be waterproof and oil-filled.
 - 5. The dial shall have a minimum diameter of 4-1/2 inches.
- B. All temperature gauges shall conform to the following requirements:
 - 1. Accuracy shall be within $\pm 1\%$ of the full scale or better.
 - 2. The dial shall have a minimum diameter of 2-1/2 inches.
- C. All instrument components interfacing with natural gas shall be made of material compatible with odorized natural gas. No copper metal or alloys containing more than 70% copper shall be used in natural gas service.
- D. All gauges and manually-operated valves shall be located no higher than five (5) feet above grade except gas dryer regeneration inlet valve.

2.7 PIPING / TUBING

- A. Piping and tubing systems shall be rated for the maximum pressure and temperature to which they will be subjected under normal operating conditions and be properly supported and protected to prevent damage from vibration during shipment, operation, and maintenance. Piping and tubing systems shall be installed in a neat and orderly arrangement, adapting to the contours of the skid package. Piping and tubing systems shall not obstruct access openings. Where practical, piping and tubing shall be installed beneath the skid deck. Supports shall not be welded directly to piping or tubing.

- B. Piping design, inspection, and testing shall be in accordance with ANSI/ASME B31.3. Piping shall be seamless and conforming to ASTM A106, Gr.B. Cast iron or semi-steel piping shall not be used. Testing shall be pneumatic.
- C. Threaded gas pipe connections may be used on 1-1/2 inch nominal pipe size and smaller for piping systems with a maximum operating pressure no greater than 150 psig. Otherwise, such piping shall be socket- or butt-welded. Piping larger than 1-1/2 inch nominal pipe size shall be butt-welded.
- D. Tubing and tube fittings shall be stainless steel. All tubing and tube fittings shall be rated for at least 6,000 psig working pressure. All tubing fittings used throughout the station system (compressor skids, dispensers, storage, and inter-skid connections) shall be Swagelok 316 stainless steel, or approved equal.
- E. Stainless steel tubing shall be seamless and bright annealed, ASTM SA-213, type 316. The maximum hardness of the stainless steel tubing shall be no more than Rockwell hardness of 80.
- F. Piping shall be prepared and painted in accordance with manufacturer's standards.
- G. Personnel installing tubing and tube fittings shall be trained and certified by the tube-fitting manufacturer. All tubing shall be installed neatly and in a workmanlike manner. All tubing shall be properly anchored, supported, and/or pitched. All tubing shall run true to the vertical and horizontal axes of the skid. All valves shall be accessible for easy operation and maintenance. Teflon paste and Teflon tape impregnated with nickel shall be used to seal tube fitting pipe thread connections.
- H. All drain lines shall be brought to skid edge and allow draining into a container placed on the ground next to the skid.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Install equipment on concrete foundations or pads in accordance with the equipment manufacturer's installation instructions and Contract Documents. The surface finish and slope of the concrete foundation shall be as specified by the equipment manufacturer's instructions. If an adhesive anchor system is used, then the installation of the anchors shall be inspected and approved in accordance with the IBC.

- B. The Contractor shall complete all equipment connections and provide a fully operational system. Flexible connectors rated for the intended service shall be provided for all piping and conduit connections to vibrating equipment.

3.2 TESTING, STARTUP, AND TRAINING

- A. Prior to shipment, the CNG compressor shall be operated for a minimum of four (4) continuous hours and functionally tested. The test shall include, but not be limited to, operation of the compressor, all control, safety shutdown and alarming systems, etc.
- B. The installed fueling equipment shall undergo a witnessed system test. At least two (2) weeks prior to the system test, the Contractor shall submit to the Owner's Representative draft Maintenance and Operating Manuals. During the testing of the mechanical, instrumentation and electrical equipment by the Contractor, the Contractor shall make available representatives of the manufacturers of all of the major equipment or other qualified persons who shall instruct the Owner's personnel in the operation and maintenance thereof. Natural gas shall be used for the system test. Piping and tubing shall be purged with nitrogen prior to introducing natural gas. The tests shall include, but not be limited to, the items listed below:
 - 1. Run test fueling station for proper operation. This includes calibrating all instrumentation.
 - 2. Test the ESD system.
 - 3. Test compressor control panel and shutdowns.
 - 4. Test dryer system.
 - 5. Test time-fill dispensing system.
 - 6. Any discrepancies found as a result of these inspections and tests shall be corrected by the Contractor at no cost to the Owner (including the cost for making all the corrections and repeating the tests within two (2) weeks.)
- C. Acceptance by the Owner's Representative of the fueling stations and associated items furnished by Contractor under this specification shall occur only after the following requirements have been met:
 - 1. It has been demonstrated to the satisfaction of the Owner Representative that the fueling stations as a whole, meet and conform to the requirements of the Specification and drawings.

2. All testing required by this Specification have been successfully completed and have been accepted by the Owner's Representative.
 3. The date of acceptance of the fueling stations shall be the date of the written notice of its acceptance by the Owner's Representative to Contractor. All warranties and/or guarantees referred to or implied in this Specification shall commence on that acceptance date.
 4. Acceptance by the Owner's Representative of the witnessed test shall not release Contractor from any of its warranty obligations, or any other obligation, under this Specification.
- D. Contractor shall provide two (2) formal training classes in station operation, service, and maintenance. Factory service representatives shall instruct the Owner's designated operating and maintenance personnel in the operation, adjustment, and maintenance of all equipment and systems. Training shall include classroom and "hands-on" activities. The basis of instruction shall be the station operating and maintenance manual.

3.3 EQUIPMENT RECORD DRAWINGS

- A. The Contractor shall update the certified shop drawings to reflect any Contractor-approved field modifications subsequent to delivery from the factory. The latest revision of the shop drawings shall be incorporated into the station operating and maintenance manuals. Drawings shall be provided in both hard copy and electronic formats.

3.4 OPERATING AND MAINTENANCE MANUALS

- A. All product data and related information appropriate for Owner's maintenance and operation of all products and systems provided under this Contract shall be compiled into an integrated operating and maintenance manual. The manual shall include written test reports documenting performance and operational data. The PLC program listing shall be included in the manual. Submit one copy of the draft manual for review by the Owner's Representative. Submit three copies of the final manual after acceptance by the Owner's Representative.

3.5 WARRANTY SERVICE

- A. Contractor shall provide a one-year warranty covering parts and labor. The warranty period shall begin upon acceptance of the station by the Owner.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15190 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 WORK INCLUDED

Identification of station interconnecting piping/tubing and off-skid mechanical devices installed under the work of the project.

1.2 RELATED SECTIONS

A. Section 09910 - Painting

1.3 REFERENCES

The following documents form a part of these specifications to the extent stated herein. Unless otherwise indicated, use the issue in effect on the date of request for quotation. Bring any conflicts between specifications, drawings, and the referenced documents to the attention of the Owner in writing, for resolution before taking any related action. Where differences exist between codes and standards, the one affording the greatest protection shall apply.

A. American Society of Mechanical Engineers (ASME)

1. ASME A13.1 Scheme for the Identification of Piping Systems

1.4 SUBMITTALS

A. Submit product data and manufacturer's installation instructions under provisions of the General Conditions.

B. Submit list of wording, symbols, letter size, and color coding for mechanical identification.

C. Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. Seton, or equal.

B. Substitutions: Under provisions of the General Conditions.

2.2 MATERIALS

- A. Color Coding: ASME - A13.1 unless specified otherwise.
- B. Plastic Nameplates: Laminated two-layer plastic with engraved black letters on light, contrasting background color.
- C. Plastic Tags: Laminated three-layer (double-sided) plastic with engraved black letters on light, contrasting background color. Tag size at least 1-1/2 inch diameter
- D. Stencils: With clean-cut symbols and letters of following size:

OUTSIDE DIAMETER INSULATION OR PIPE	COLOR FIELD LENGTH	LETTER HEIGHT
3/4" - 1-1/4"	8"	1/2"
1-1/2" - 2"	8"	3/4"
over 2-1/2"	12"	1-1/4"
Equipment	---	2-1/2"

- E. Stencil Paint: Semi-gloss enamel; in accordance with Section 09910.
- F. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and fluid being conveyed. Markers shall be weatherproof and fade/UV resistant.
- G. Plastic-Tape Pipe Markers: Flexible, vinyl-film tape with pressure-sensitive adhesive backing and printed markings. Markers shall be weatherproof and fade/UV resistant.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive of identification materials.
- B. Prepare surfaces in accordance with Section 09910 for stencil painting.

3.2 INSTALLATION

- A. Plastic Nameplates: Install with corrosion-resistant mechanical fasteners, or adhesive.
- B. Plastic Tags: Install with corrosion-resistant chain.
- C. Stencil Painting: Apply in accordance with Section 09910.
- D. Plastic Pipe Markers: Install in accordance with manufacturer's instructions.
- E. Plastic-Tape Pipe Markers: Install completely around pipe in accordance with manufacturer's instructions.

3.3 IDENTIFICATION SCHEDULE

- A. Equipment: Identify with plastic nameplates. Small devices, such as in-line pumps, may be identified with plastic tags.
- B. Controls: Identify control panels and major control components outside of panels with plastic nameplates.
- C. Valves: Identify valves in main and branch piping with tags.
- D. Piping: Identify piping with vinyl markers or stenciled painting. Vinyl markers shall be weatherproof and fade/UV resistant. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not more than 20 feet apart on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15410 - GAS PIPING AND TUBING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

- A. The work of this Section includes the furnishing of all labor, minor materials, equipment, tools, and services needed to complete all natural gas, compressed air, lube oil piping and tubing shown on the Drawings and as specified herein. It also includes all materials, labor, etc., neither specifically mentioned nor shown, but which can reasonably be inferred as being necessary for a complete installation. The work shall be properly adjusted and fully operable.

1.2 DRAWINGS:

- A. Drawings showing location of equipment, piping, tubing, etc., are diagrammatic and job conditions will not always permit their installation in the location shown. The drawings show the general arrangement of all piping, tubing, equipment, etc., and shall be followed as closely as existing conditions, actual building construction, and the work of other trades will permit. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories, which may be required. The Contractor shall investigate the conditions affecting the work and shall arrange the work accordingly providing such fittings, valves and accessories as may be required to meet conditions at no additional cost to the Owner. When job conditions do not permit installation of equipment, piping, etc., in the locations shown, it shall be brought to the Owner's Representative's attention immediately and the relocation determined in a joint conference and the relocation shall be at no additional cost to the Owner. The Contractor shall be held responsible for the relocation of any items without first obtaining the Owner's Representative's approval. Contractor shall remove and relocate such items at Contractor's expense if so directed by the Owner's Representative.
- B. Execute work mentioned in the specifications and not shown on the drawings, or vice versa, the same as if specifically mentioned in both.

1.3 RECORD DRAWINGS:

- A. Contract Drawings and Shop Drawings shall be updated and maintained as record documents.

1.4 CODE RULES AND SAFETY ORDERS:

A. Provide all work and materials in full accordance with the latest rules and regulations at the time of bid of at least the following codes and standards:

1. American Petroleum Institute (API)
 - a. API Recommended Practice 520, Sizing, Selection, and Installation of Pressure Relieving Devices in Refineries
2. American Society of Mechanical Engineers (ASME)
 - a. ASME Boiler and Pressure Vessel (B&PV) Code
 - b. Section VIII, Division I - Pressure Vessels
 - c. Section V, Nondestructive Examination
 - d. Section IX, Welding and Brazing Qualifications
 - e. ASME A13.1, Scheme for the Identification of Piping Systems
 - f. ASME B16.25, Buttwelding Ends
 - g. ASME B31.3, Process Piping
3. American Society for Nondestructive Testing (ASNT)
 - a. SNT-TC-1A Recommended Practice
4. American Welding Society (AWS)
 - a. A5.1 Carbon Steel Electrodes for Shielded Metal Arc Welding
 - b. A5.4 Stainless Steel Electrodes for Shielded Metal Arc Welding
 - c. A5.5 Low Alloy Steel Electrodes for Gas Shielded Metal Arc Welding
5. International Code Council (ICC)
 - a. International Building Code (IBC)
 - b. International Fire Code (IFC)
 - c. International Mechanical Code (IMC)
 - d. International Plumbing Code (IPC)
6. National Fire Protection Association (NFPA)
 - a. NFPA 52 Vehicular Fuel Systems Code
 - b. NFPA 54 National Fuel Gas Code
 - c. NFPA 70 National Electrical Code (NEC)
 - d. NFPA 704 Identification of the Hazards of Materials for Emergency Response
7. Society of Automotive Engineers (SAE)

- a. SAE J1616 Recommended Practice for CNG Vehicle Fuel
- 8. Underwriters Laboratories Inc. (UL)
 - a. UL 508 Industrial Control Equipment
 - b. UL 508A Industrial Control Panels
 - c. UL 1604 Electrical Equipment for Use in Class I and II, Division 2, and Class III Hazardous (Classified) Locations.
- 9. U.S. Department of Labor
 - a. Title 29, Code of Federal Regulations (CFR) Part 1910 Occupational Health and Safety Standards

1.5 PRODUCT HANDLING:

- A. Protection: Use all means necessary to protect all materials before, during, and after installation and to protect the work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.6 EXISTING MATERIALS:

- A. Existing equipment, piping, wiring, construction, etc. which interferes with work of this contract shall be brought to the attention of the Owner's Representative. Damaged items shall be replaced with new material to match existing.
- B. Perform all cutting of existing surfaces as required by work of this contract. After installation of the work of this contract is complete, repair and finish all surfaces to match adjacent areas. All new and existing work shall be thoroughly bonded and joined together.
- C. Removed materials which will not be reused and which are not claimed by the Owner shall become the property of the Contractor and shall be removed from the premises. Consult Owner before removing any material from premises. Materials claimed by Owner shall be removed carefully to prevent damage and delivered to the site where directed.

1.7 CARE AND CLEANING:

- A. All broken, damaged, or otherwise defective parts shall be repaired or replaced without additional cost to the Owner, and entire work left in a condition satisfactory to Owner's Representative. At completion, carefully clean and adjust all equipment, fixtures, and trim installed as part of this

work, and systems and equipment shall be left in satisfactory operating condition.

- B. All surplus materials and debris resulting from this work shall be cleaned out and removed from site.

1.8 SAFETY AND WORK CONDITIONS:

- A. All OSHA rules and regulations concerning handling of materials and all work related activities shall be strictly adhered to.

1.9 SUBMITTALS:

- A. The Contractor shall provide a complete list of materials and equipment proposed to the Owner for acceptance. The list shall include for each item: the manufacturer, the manufacturer's catalog number, catalog cuts or drawings, test certificates for pipe and tubing, the rating, capacity, size, etc. Test certificates for pipe shall include the items specified in API Specification 5L, Supplementary Requirement 15.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. PIPING AND TUBING:

1. Provide each item listed herein or shown on drawings of quality noted or equal. All material shall be new, full weight, standard in all respects and in first-class condition. Insofar as possible, all materials used shall be of the same brand or manufacture throughout for each class of material or equipment.
2. All pipe shall be steel, seamless, standard, ASTM A-106 Grade B or 316 stainless steel, seamless, as shown on the drawings. All pipe shall comply with the requirements of ASME B31.3 based on the operating pressures indicated on the drawings. Underground warning tape shall be, TERRA TAPE, EXTRA STRENGTH 540 labeled with the words, "CAUTION GAS LINE BURIED BELOW."
3. All tubing shall be ASTM A-213, type 316 stainless steel, fully-annealed, seamless, Maximum Rockwell Hardness B-80. Tubing is to be free of scratches and suitable for bending. Where the following Nominal OD tubing is specified, the corresponding minimum wall thickness shall be used for CNG service:

Nominal OD	Minimum Wall Thickness
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1/4"	.035"
3/8"	.049"
1/2"	.065"
3/4"	.109"

4. Contractor shall provide all materials for repair or replacing of existing substructures, such as water service, sewer laterals, or any other facilities that are cut or damaged by Contractor.
 5. Electrodes and related material required for Contractor's welding operations. Electrodes shall fully comply with all requirements contained in AWS Specifications, including but not limited to Specification for Carbon Steel Covered Arc Welding Electrodes AWS 5.1, AWS Specification for low-Alloy Steel covered Arc-welding Electrode AWS A5.5, and shall produce field welding results, which fully comply with test requirements listed above. Welding rods shall be delivered to the job site in unopened metal containers.
- B. The Contractor shall be responsible for pickup, transportation, off loading and storing materials, and providing all equipment and manpower necessary to complete the work as specified herein.
1. Contractor shall be solely responsible for delivering the required quantities of proper, usable materials to the various points of installation within sufficient time to permit construction of the CNG Fueling station in accordance with the Construction Schedule.
 2. Precautions shall be taken to prevent deterioration effects of weather on the materials. Materials shall be stored by Contractor in a secure area either on or off the job site.
 3. Salvage material will consist of all items to be removed or otherwise not reused. The Contractor shall assume full responsibility for proper disposal.

PART 3 - EXECUTION

3.1 PIPE/VENT INSTALLATION:

- A. The welding of any fittings required to tie in the new gas piping to the new gas meter set, shall be performed by the Contractor.
- B. The tie-in shall be performed by the Contractor.
- C. A fully-charged fire extinguisher shall be immediately available at each location where welding or cutting will be done.

- D. All steel pipe fittings shall be threaded or butt-welded as specified In the drawings.
- E. Piping shall be labeled describing contents and flow direction.
- F. Pipes shall be supported as shown in the drawings by pipe supports with U-bolts over the pipe.
- G. Vent stacks shall be at least ten (10) feet above grade. A 1/8-inch weep hole shall be drilled at the bottom of each vent stack.

3.2 TUBING, TUBE FITTINGS, VALVES AND GAUGES:

- A. Material used in the system must be selected to minimize the potential for internal corrosion. No copper or an alloy containing more than 70% copper shall be used in natural gas service. No cast iron or semi-steel material shall be used. Also prohibited is galvanized pipe and fittings, and aluminum pipe, tubing, and fittings except as permitted by NFPA 52.
- B. All tubing shall be in accordance with Article 2.1A, Paragraph 3. All tube fittings shall be Swagelok, 316 stainless steel.
- C. All valves shall be tagged in accordance with Section 15190 - Mechanical Identification.
- D. Tubing shall be installed to withstand vibration, expansion, and contraction. Consideration should be given to seismic loading when bending and securing tubing. All valves shall be accessible for easy operation and maintenance.
 - 1. Contractor shall use certified tubing installers. It shall be the responsibility of Contractor to have tubing installer trained and certified by a tube fitting manufacturer to install tube and required fittings per the manufacturer's installation instructions.
 - 2. Teflon paste and Teflon tape impregnated with nickel shall be used to seal tube fitting pipe thread connections.
- E. Tubing shall be labeled describing contents and flow direction.
- F. Risers for buried steel piping shall be placed in a PVC sleeve.
- G. Contractor shall support and protect tubing against damage. Tubing shall be supported every five feet. Contractor shall install removeable stainless steel thresholds over tubing for protection from foot traffic.

3.3 WELDING:

- A. All welding shall be done in accordance with the latest edition of ASME B31.3 Chemical Plant and Petroleum Refinery Piping, ASME Boiler Pressure Vessel Code Section IX, and ASME/ANSI B16.25 Buttwelding Ends. Each welder shall be tested and qualified for the type and method of welding to be done in accordance with the above codes and standards. Each welder must provide to the Owner's Representative:
 - 1. A qualification record signed by an authorized officer of the testing laboratory, or welding inspector and the Contractor's authorized representative, or,
 - 2. Previous welding certification (active certification within the previous six months) may be submitted to the Owner's Representative.
- B. All field joints on pipe installed in the CNG Fueling station shall be welded, including fittings and accessories. Welding may be done by Shielded Metal-Arc Welding, Submerged Arc Welding, or Gas Metal-Arc Welding Process, using a manual, semi-automatic, or automatic welding technique or combination of these techniques.
- C. At the end of the workday, all open ends of completed pipe sections and sections that have been lined up and not welded, shall be securely closed by the Contractor by means of approved covers which will keep foreign matter out of the pipeline such as water, trash, small animals or other objects. These covers shall be put in place and shall remain in place until the respective section becomes a part of a larger section. The covers shall not be tack welded to the pipe.
- D. The Contractor shall have fire-fighting equipment available while cutting and/or welding. Fire control equipment may include but not be limited to water trucks, water pumps, fire extinguishers, mats under welders, etc.
- E. Hot or cold bending of any pipe is not permitted.
- F. No miter welds will be permitted in the construction of any piping.

3.4 CATHODIC PROTECTION:

- A. All buried carbon steel portions of the piping system must be isolated and cathodically protected to insure a -850 millivolt pipe to soil potential for a minimum of 30 years. Conductors shall be attached to gas pipes by thermite welding. Soil resistivity test is the responsibility of the Contractor.
- B. Contractor shall provide all materials including, but not limited to, prepackaged anodes, test station (with leads, wire, terminal board, and

fittings), valve box with cover suitable for H-20 traffic loading, and cad weld thermite cartridges for a complete cathodic protection system.

3.5 FIELD COATING OF BURIED PIPE:

- A. Specifically, the work to be performed under this section is the furnishing and application of protective coatings to all pipe, conduit, field joints, damaged pipe wrap, tees, ells, fittings, and any other bare metal surfaces to be buried. No galvanized pipe shall be buried.
- B. Contractor shall purchase plastic-coated pipe when available. If plastic-coated pipe is not available, Contractor shall field-wrap all buried pipe. The field coating of bare pipe shall be considered a normal part of the pipe installation.
- C. The Contractor is required to repair all damaged wrap or defects prior to lowering into the ditch. The field coating of bare pipe and/or damaged wrap shall be considered a normal part of the pipe installation.
- D. Contractor will be responsible for the condition of the pipe coating at the time he takes possession of the pipe.
- E. The wrapped pipe shall be visually inspected by the Contractor. Poor wrap shall be removed and repaired. The Owner shall have the opportunity to perform holiday test of factory and field-wrapped pipe.
- F. Prior to application, all surfaces to which a protective coating is to be applied shall be thoroughly dried and cleaned of all paint, rust, scale, grease, dirt, and foreign matter.
- G. Cold-applied tape and primer must be used on all field joints, damaged plant wrap, tees, ells, fittings, and any other bare metal surfaces to be buried, unless otherwise specified. See Article 3.5, Paragraph N, for approved tape and primer. Method of application for wrapping and wrap repair shall be in accordance with approved manufacturer's procedure.
- H. At points where pipe or steel conduit emerges from or enters the ground, the wrap shall extend 2 inches above the finished ground level.
- I. If the field wrappings with tape of fittings and valves not furnished coated is unsatisfactory because of irregular surfaces, the Contractor may, with the consent of the Owner's Representative, elect to apply PPG Industries Coal Cat WC 40101, Royston Laboratories Roskote 201, Coal Tar Epoxies. The application shall be made in accordance with manufacturer's recommendations to obtain a thickness of 8 mils or more.

- J. All exposed above-ground bare metal surfaces, unless otherwise specified shall be painted with one prime coat, and two finish coats (Section 09910) of semi-gloss silicone alkyd (minimum 2 mils dry film thickness.) Care shall be taken to prevent abrasion or scarring of the prime coat. Any damage to the primer shall be repaired before subsequent coats are applied. The prime coat shall be thoroughly dry before the paint coat is applied. Paint shall be applied at a coverage rate as recommended by the manufacturer. Owner shall specify color of finish coat.
- K. Contractor shall furnish all materials for all field coating operations. Material shall be per Article 3.5, Para M. The field coating materials shall be considered a normal part of the NGV fueling station installation.
- L. Contractor shall field-wrap all damaged wrap on buried steel conduit. The field coating of buried bare steel conduit shall be considered a normal part of the pipe installation.
- M. Cold-applied tapes and primers approved for below-ground installations are listed below according to their brand names, identification numbers, tape width, and the pipe sizes on which the tapes are used.
- N. Acceptable Manufacturer:
 - 1. Primer – Polyken 1027; Pipe Coating – Polyken 930-35
- O. Two-inch wide tape shall be used for all fittings and multi-directional wrapping.
- P. Joints and fittings require two layers of wrap. The tape shall be applied with a 60% overlap.
- Q. Materials for above-ground protective coating shall be per industry standard.
- R. Contractor shall collect and haul away from jobsite all wrapping wastes, such as scrap tape, primer, cans, etc.

3.6 CLEANUP:

- A. Working areas and adjacent areas used in the performance of the work shall be left in a neat and presentable condition. All debris shall be collected and disposed of to the satisfaction of the Owner.
- B. Contractor shall restore the construction site daily so as to leave the surface of the ground as normal as practicable. Contractor shall leave the soil and yard in a condition satisfactory to the Owner's Representative.

This will include, but not be limited to street sweeping, temporary and permanent paving, and plating to allow safe flow of traffic.

- C. Clean up by Contractor shall include purging of all pipe and tubing installed as part of this project prior to placing in operation. Purpose of purging is to remove any sand, dirt, weld slag, burrs, and other foreign material to avoid plugging and damaging the equipment.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15991 - TESTING AND STARTUP

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Facility Pressure Testing
- B. Facility Startup

1.2 RELATED SECTIONS

- A. Section 15410 - Gas Piping and Tubing

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

3.1 FACILITY PRESSURE TEST

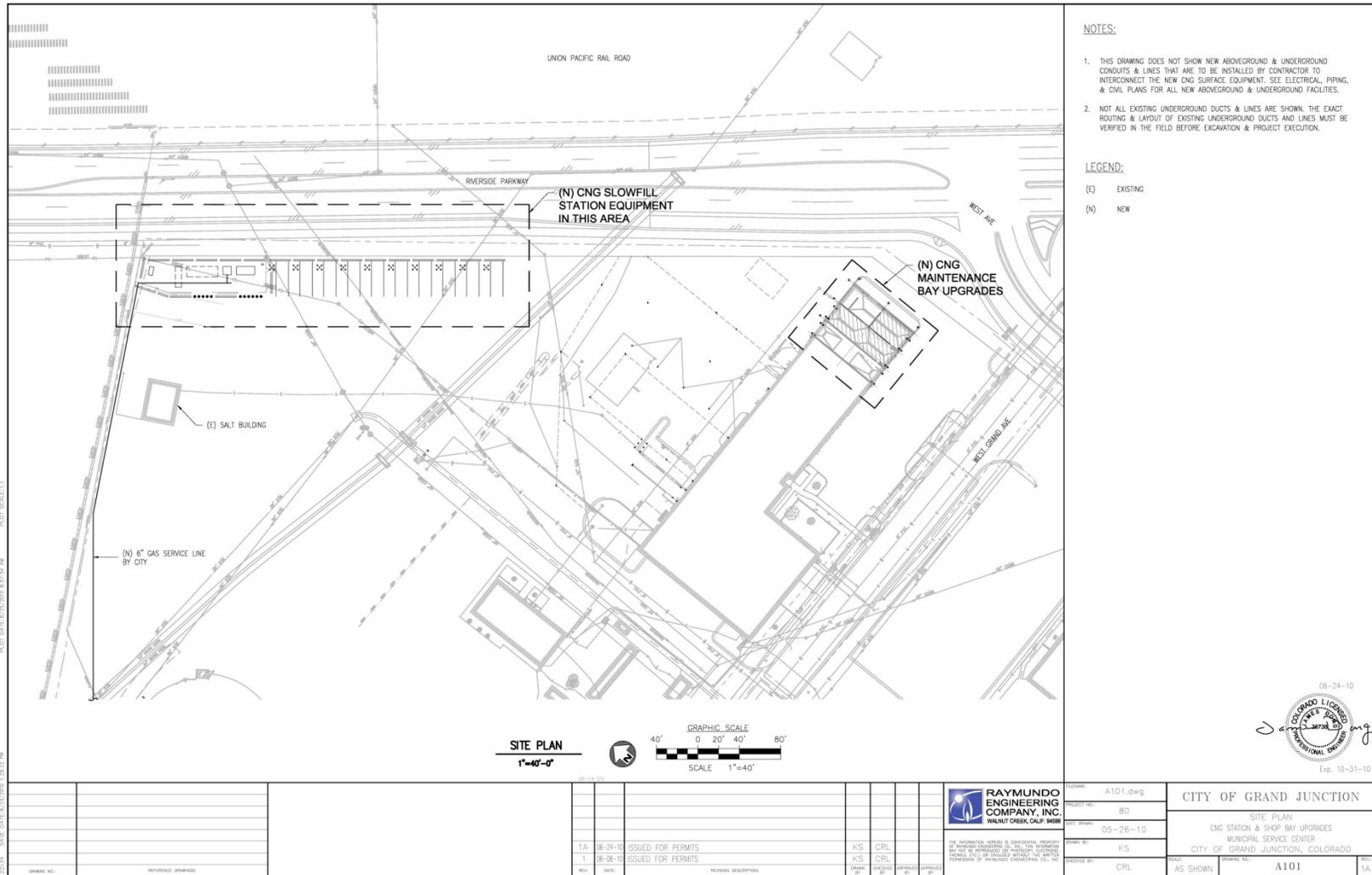
- A. The Contractor shall be responsible for arranging and performing all tests of the CNG fueling system as required by the applicable codes, regulatory agencies and this specification.
- B. A pressure test in accordance with ASME B31.3 Paragraph 345.5.5 shall be performed on the completed interconnecting piping and tubing system prior to tying to the gas meter. A minimum test pressure as shown on the drawings shall be maintained for at least four hours. Nitrogen shall be used as the pressure test fluid. All testing will be done in the presence of the Contractor, Owner's Representative, and regulatory agencies (if necessary).
- C. Pressure tests of the piping system shall be recorded on a pressure recording device (e.g., chart recorder) in the presence of the Owner's Representative. Proof of pressure recording device calibration within six (6) months prior to the test is required. The Owner's Representative must initial all Pressure Test records and witness all Pressure Tests.
- D. The testing, to the extent the schedule permits, shall be organized to minimize the number of separate tests. If possible, the entire system shall be tested as a single testing segment.

- E. Upon completion of any test, all test records shall become the property of the Owner. The Contractor shall forward to the Owner's Representative copies of test records indicating that all piping has been strength- or pressure-tested. Test records shall be signed and dated by the Owner's Representative upon witnessing and verifying said test. It is the responsibility of the Contractor to ensure that all representatives of the permitting agencies that may be required to witness testing are given at least one (1) week notice prior to any testing of the CNG Fueling Station.
- F. If a tested section fails to maintain the specified test pressure, the Contractor shall determine the location of the leakage or failure. The contractor shall remove the defective section and install, with new material, a replacement section prior to reinitiating the test. The section shall be retested in its entirety for at least four hours. The defective section shall remain the property of the Owner.
- G. The system, after completion of the required leak or strength test, shall remain pressurized until the Owner's Representative is on site. Depressurization of the system shall only commence after authorization from the Owner's Representative. If the system fails to maintain pressure during the period subsequent to the test, damage to the system must be suspected and the system must be retested.
- H. The Owner shall not be held liable for any additional costs associated with damages, repair, retesting, investigation, etc., arising from failures due to inferior workmanship, and/or materials furnished by the Contractor which prove to be defective until testing.
- I. Once the facilities are successfully pressure-tested, the Contractor shall not perform any maintenance or further work on the facilities without the express written permission of the Owner's Representative.

3.2 FACILITY STARTUP

- A. The installed fueling station shall undergo a witnessed system test. Contractor shall provide assistance as needed during system testing. Natural gas shall be used for the system test. Piping and tubing shall be purged with nitrogen prior to introducing natural gas. The tests shall include, but not be limited to, the items listed below:
 - 1. Run test fueling station for proper operation. This includes calibrating all instrumentation.
 - 2. Test the ESD system.
 - 3. Test compressor control panels and shutdowns.

Appendix G. Design Documents from City of Grand Junction



Sample layout only: more detailed design drawings too large to include in report document

Appendix H. DIA Refueling System 2006 Upgrade Cost Estimates

Refueling system estimated capital costs (2006 "minimum" estimate) from DIA

Item	Fleet Maintenance	Rental Car Road	Concourse A/B/C	Total
Equipment	\$15,000	\$446,000	\$38,000	\$499,000
Piping/trenching	\$14,000	\$37,000	\$118,000	\$169,000
Installation	\$14,000	\$113,000	\$12,000	\$139,000
Sitework	\$15,000	\$98,000	\$-	\$113,000
Engineering design	\$-	\$25,000	\$-	\$25,000
Other	\$2,000	\$20,000	\$2,000	\$24,000
Total	\$60,000	\$739,000	\$170,000	\$969,000

Piping/trenching distance

Trenching feet from origin	# pipes	Size (inches)
141	2	1
202	3	1
105	2	1
180	3	1
105	3	1
108	2	1
105	3	1
115	2	1
201	3	1
165	3	1
207	2	1
282	3	1
25	3	1
30	2	1
3168	1	2
	feet	miles
Pipe length (total)	8,375.0	1.6
Trenching	5,139.0	1.0

Appendix I. CNG Engine and Vehicle Availability

OEM Availability - Summary

North America					
OEM	Model	Segment	ISL G	ISX12 G	Comments
Freightliner Truck	Business Class M2 112 (Class 7/8)	MD/HD Truck	X		Applications: 6X4 Tractor (LNG, CNG), CNG - 4X2 Tractor, 6X2, 4X2 Truck, Vocational
	Cascadia	HD Truck		X	ISX12 G - Mid 2013
Kenworth	W900S	MD/HD Truck	X	X	Vocational/Mixer
	T440 / T470	MD/HD Truck	X		Local & regional haul, vocational.
	T660	HD Truck		X	ISX12 G - Mid 2013
Peterbilt	Model 384	MD/HD Truck	X	X	Model 384 - Tractor
	Model 365	MD/HD Truck	X	X	ISX12 G - Mid 2013
Volvo	VNM	MD/HD Truck	X		
	VNL	HD Truck		X	ISX12 G - Mid 2013
Mack	Pinnacle	HD Truck		X	ISX12 G - Mid 2013
	Granite	HD Truck		X	ISX12 G - Mid 2013
International	TranStar	MD/HD Truck	X		New 2012
American LaFrance	Condor	Refuse	X		
AutoCar	ACX	Refuse	X	X	ISX12 G - Mid 2013
Crane Carrier	LCF	Refuse	X		
Peterbilt	320	Refuse	X	X	ISX12 G - Mid 2013
Mack	TerraPro Low Entry	Refuse	X		
Mack	TerraPro Cab Over	Refuse	X		
NABI	35 LFW/40 LFW/60 BRT	Urban Bus	X		
New Flyer	30 LF/35 LF/40 LF	Urban Bus	X		
Orion	Orion V HF/Orion VII LF	Urban Bus	X		
Foton	City - L40 CNG	Urban Bus	X		
Gillig	LF	Urban Bus	X		New 2011
MCI	Commuter Coach 40/45	Motor Coach	X		New 2011
DesignLine	Commuter Coach 40/45	Motor Coach	X		New 2012
El Dorado National	Axess/E-Z Rider II/Transmark RE/XHF	Shuttle	X		
Blue Bird	All American	School Bus	X		
Thomas Bus	Saf-T Liner	School Bus	X		
Capacity	TJ9000 , TJ5000	Yard Spotter	X		
AutoCar	Xspotter	Yard Spotter	X		

Available NGV Aftermarket Conversion Systems

The information contained in this document covers aftermarket conversion systems that consumers and businesses may purchase in order to modify new or used vehicles so that they can operate on natural gas. Some of these systems may be ordered directly through automotive dealerships when placing an order for a new vehicle. However, all of the systems listed here are aftermarket from the standpoint that they are offered as modifications to original equipment manufacturer (OEM) gasoline or diesel fueled vehicles.

The information is organized by certified or approved light-duty and heavy-duty chassis vehicles, as well as by certified or approved heavy-duty engines. The individual sheets are further organized by OEM (e.g., Chrysler, Ford, or GM), model year, and engine size, so that persons interested in a conversion system for a particular vehicle may quickly locate it. All of the systems listed have been either certified or approved by the U.S. Environmental Protection Agency (EPA) or the California Air Resources Board (CARB). Please do not contact NGV America regarding the availability of aftermarket systems. NGV America does not sell conversion systems or provide any services related to the installation of such systems.

Please review the listings of available systems and also the websites of the companies who offer them. All of these companies are dealing with a large number of inquiries and a significant demand for NGVs, so please review all available materials before making inquiries about particular vehicles, systems, or engines.

For future updates of this document, visit the NGV America site here:
http://www.ngvamerica.org/about_ngv/available_ngv.html

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Chrysler	2012	3.6	NatGasCar: Grand Caravan, Ram C/V, Routan, Town & Country	CNG	Gasoline/E85	Nat Gas Car LLC	CCRJI03.6VPA	CCRXR0150RMA	CNATJ03.6VPB-014	CNATR0150RM1	CNATJ03.6VPB	EPA Cert
Chrysler	2012	3.6	NatGasCar: Journey	CNG	Gasoline/E85	Nat Gas Car LLC	CCRJI03.6VPA	CCRXR0153PMA	CNATJ03.6VPB-015-R01	CNATR0153PM1	CNATJ03.6VPB	EPA Cert
Chrysler	2012	3.6	NatGasCar: 200, 200 Convertible, Avenger	CNG	Gasoline/E85	Nat Gas Car LLC	CCRJI03.6VPA	CCRXR0130PMA	CNATJ03.6VPB-016-R01	CNATR0130PM1	CNATJ03.6VPB	EPA Cert
Chrysler	2012	3.6	NatGasCar: Grand Caravan, Ram C/V, Routan, Town & Country	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	CCRJI03.6VPA	CCRXR0150RMA	CNATJ03.6VPA-011	CNATR0150RMA	CNATJ03.6VPA	EPA Cert
Chrysler	2012	3.6	NatGasCar: 200, 200 Convertible, Avenger	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	CCRJI03.6VPA	CCRXR0130PMA	CNATJ03.6VPA-012-R01	CNATR0130PMA	CNATJ03.6VPA	EPA Cert
Chrysler	2012	3.6	NatGasCar: Journey	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	CCRJI03.6VPA	CCRXR0153PMA	CNATJ03.6VPA-013-R01	CNATR0153PMA	CNATJ03.6VPA	EPA Cert
Chrysler	2012	4.7	NatGasCar: Ram 1500 2WD, Ram 1500 4WD	CNG	Gasoline/E85	Nat Gas Car LLC	CCRXT04.7UPA	CCRXR0190RKA	CNATT04.7UPB-006	CNATR0190RK1	CNATT04.7UPB	EPA Cert
Chrysler	2012	4.7	NatGasCar: Ram 1500 2WD, Ram 1500 4WD	CNG	Gasoline/E85	Nat Gas Car LLC	CCRXT04.7UPA	CCRXR0225RKA	CNATT04.7UPB-007	CNATR0225RK1	CNATT04.7UPB	EPA Cert
Chrysler	2012	4.7	NatGasCar: Ram 1500 2WD, Ram 1500 4WD	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	CCRXT04.7UPA	CCRXR0190RKA	CNATT04.7UPA-004	CNATR0190RKA	CNATT04.7UPA	EPA Cert
Chrysler	2012	4.7	NatGasCar: Ram 1500 2WD, Ram 1500 4WD	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	CCRXT04.7UPA	CCRXR0225RKA	CNATT04.7UPA-005	CNATR0225RKA	CNATT04.7UPA	EPA Cert
Chrysler	2011	3.6	NatGasCar: Grand Caravan, Routan, Town & Country	CNG	Gasoline/E85	Nat Gas Car LLC	BCRXJ03.6UPA	BCRXR0150RKA	CNATJ03.6UPB-001	CNATR0150RK1	CNATJ03.6UPB	EPA Cert
Chrysler	2011	3.6	NatGasCar: 200, 200 Convertible, Avenger	CNG	Gasoline/E85	Nat Gas Car LLC	BCRXJ03.6UPA	BCRXR0130PKA	CNATJ03.6UPB-002	CNATR0130PK1	CNATJ03.6UPB	EPA Cert
Chrysler	2011	3.6	NatGasCar: Journey	CNG	Gasoline/E85	Nat Gas Car LLC	BCRXJ03.6UPA	BCRXR0153PKA	CNATJ03.6UPB-003	CNATR0153PK1	CNATJ03.6UPB	EPA Cert
Chrysler	2011	3.6	NatGasCar: 200, 200 Convertible, Avenger	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	BCRXJ03.6UPA	BCRXR0130PKA	CNATJ03.6UPA-008	CNATR0130PKA	CNATJ03.6UPA	EPA Cert
Chrysler	2011	3.6	NatGasCar: Grand Caravan, Routan, Town & Country	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	BCRXJ03.6UPA	BCRXR0150RKA	CNATJ03.6UPA-009	CNATR0150RKA	CNATJ03.6UPA	EPA Cert
Chrysler	2011	3.6	NatGasCar: Journey	CNG or gasoline/E85	Gasoline/E85	Nat Gas Car LLC	BCRXJ03.6UPA	BCRXR0153PKA	CNATJ03.6UPA-010	CNATR0153PKA	CNATJ03.6UPA	EPA Cert
Chrysler	2011	4.7	01: Dodge Dakota, Dodge Ram 1500, Mitsubishi Raider	CNG	Gasoline	Nat Gas Car LLC	BCRXT04.7UPA	BCRXR0180RKA; BCRXR0190RKA; BCRXR0225RKA	BNATT04.7UPF-004	BNATR0180RKA	BNATT04.7UPF	EPA Cert
Chrysler	2010	4.7	01: Dodge Dakota, Dodge Ram 1500, Mitsubishi Raider	CNG	Gasoline	Nat Gas Car LLC	ACRXT04.7UPC	ACRXR0180RKA; ACRXR0190RKA; ACRXR0225RKA	BNATT04.7UPD-002	BNATR0180RKA	BNATT04.7UPD	EPA Cert
Chrysler	2011	4.7	01: Dodge Dakota, Dodge Ram 1500, Mitsubishi Raider	CNG or gasoline	Gasoline	Nat Gas Car LLC	BCRXT04.7UPA	BCRXR0180RKA; BCRXR0190RKA; BCRXR0225RKA	BNATT04.7UPE-003	BNATR0180RKA	BNATT04.7UPE	EPA Cert
Chrysler	2010	4.7	01: Dodge Dakota, Dodge Ram 1500, Mitsubishi Raider	CNG or gasoline	Gasoline	Nat Gas Car LLC	ACRXT04.7UPC	ACRXR0180RKA; ACRXR0190RKA; ACRXR0225RKA	BNATT04.7UPB-001	BNATR0180RKA	BNATT04.7UPB	EPA Cert
Ford	2012	2.0	Altech-Eco Corporation: Transit Connect Van, Transit Connect Wagon FWD	CNG	Gasoline	Altech-Eco Corporation	CFMXT02.01DW	CFMXR0125NBB	CAECT02.01DB-019	CAECR0125NB2	CAECT02.01DB	EPA Cert
Ford	2012	2.0	Altech-Eco Corporation: Transit Connect Van, Transit Connect Wagon FWD	CNG or gasoline	Gasoline	Altech-Eco Corporation	CFMXT02.01DW	CFMXR0125NBB	CAECT02.01DW-020	CAECR0125NBB	CAECT02.01DW	EPA Cert
Ford	2012	2.0	BAF Technologies: Ford Transit Connect	CNG	Gasoline	BAF Technologies	CFMXT02.01DW	CFMXR0125NBB	CBAFT02.01DW-002	CBAFR0000001	CBAFT02.01DW	EPA Cert, CARB
Ford	2012	5.0	AEC: F150 Pickup 2WD Altech-Eco Corporation: F150 Pickup 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	CFMXT05.03DD	CFMXR0265NBV	CAECT05.03DA-014	CAECR0265NB1	CAECT05.03DA	EPA Cert
Ford	2012	5.0	AEC: F150 Pickup 2WD Altech-Eco Corporation: F150 Pickup 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	CFMXT05.03DD	CFMXR0265NBV	CAECT05.03DD-013	CAECR0265NBV	CAECT05.03DD	EPA Cert
Ford	2012	5.0	IA Bi-Fuel CNG - Ford: F150 Pickup 2WD, F150 Pickup 4WD	CNG or gasoline/E85	Gasoline/E85	IMPSCO Technologies, Inc.	CFMXT05.03DD	CFMXR0265NBV	CZ9XT05.0BNA-005	CZ9XR0265CB1	CZ9XT05.0BNA	EPA Cert
Ford	2012	5.4	BAF Technologies: E350 Cutaway	CNG	Gasoline/E85	BAF Technologies	CFMXE05.4AFD		CBAFD05.4AFD-009	CBAFR0000001	CBAFD05.4AFD	EPA Cert
Ford	2012	5.4	BAF Technologies: Ford E-Series Van	CNG	Gasoline/E85	BAF Technologies	CFMXT05.45HK	CFMXR0265NBD; CFMXF0265NBS	CBAFT05.45HK-001	CBAFR0000001	CBAFT05.45HK	EPA Cert

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2012	5.4	Landi Renzo USA: E150 VAN CNG, E150 WAGON CNG, E250 VAN CNG, E350 CUTAWAY CNG, E350 VAN CNG, E350 WAGON CNG	CNG	Gasoline/E85	Landi Renzo USA Corporation	CFMXT05.45HK	CFMXXR0265NBD; CFMXXF0265NBS	CLDRT05.4A11-001-R01	CLDRT0000A11	CLDRT05.4A11	EPA Cert, CARB
Ford	2012	6.2	Altech-Eco Corporation: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 4WD Bed Delete, F350 2WD, F350 2WD Bed Delete, F350 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	CFMXT06.27HL	CFMXXF0250NBS	CAECT06.27HA-010	CAECF0250NB3	CAECT06.27HA	EPA Cert
Ford	2012	6.2	Altech-Eco Corporation: F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	CFMXT06.27HL	CFMXXR0250NBS	CAECT06.27HA-011	CAECR0250NB3	CAECT06.27HA	EPA Cert
Ford	2012	6.2	Altech-Eco Corporation: F350 Incomplete 2WD, F350 Incomplete 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	CFMXT06.27HL	CFMXXF0265GAS	CAECT06.27HA-012	CAECF0265GA1	CAECT06.27HA	EPA Cert
Ford	2012	6.2	Altech-Eco Corporation: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 4WD Bed Delete, F350 2WD, F350 2WD Bed Delete, F350 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	CFMXT06.27HL	CFMXXF0250NBS	CAECT06.27HL-007	CAECF0250NB2	CAECT06.27HL	EPA Cert
Ford	2012	6.2	Altech-Eco Corporation: F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	CFMXT06.27HL	CFMXXR0250NBS	CAECT06.27HL-008	CAECR0250NB2	CAECT06.27HL	EPA Cert
Ford	2012	6.2	Altech-Eco Corporation: F350 Incomplete 2WD, F350 Incomplete 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	CFMXT06.27HL	CFMXXF0265GAS	CAECT06.27HL-009	CAECF0265GAS	CAECT06.27HL	EPA Cert
Ford	2012	6.2	BAF Technologies: Ford F250/350	CNG	Gasoline/E85	BAF Technologies	CFMXT06.27HL	CFMXXR0250NBS; CFMXXF0250NBS; CFMXXF0265GAS	CBAFT06.27HL-003	CBAFR0000001	CBAFT06.27HL	EPA Cert
Ford	2012	6.2	IA Dedicated CNG - Ford: Ford F250 Pickup 2WD, Ford F250 Pickup 4WD, Ford F350 Pickup 2WD, Ford F350 Pickup 4WD	CNG	Gasoline/E85	IMPSCO Technologies, Inc.	CFMXT06.27HL	CFMXXR0250NBS; CFMXXF0250NBS; CFMXXF0265GAS	CZ9XT06.2DCE-014	CZ9XR0000DCE	CZ9XT06.2DCE	EPA Cert
Ford	2012	6.2	IA Bi-Fuel CNG - Ford: F250 PICKUP 2WD, F250 PICKUP 4WD, F350 4WD, F350 2WD	CNG or gasoline/E85	Gasoline/E85	IMPSCO Technologies, Inc.	CFMXT06.27HL	CFMXXR0250NBS	CZ9XT06.2BC2-015	CZ9XR0250BCC	CZ9XT06.2BC2	EPA Cert
Ford	2012	6.2	IA Bi-Fuel CNG - Ford: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 4WD, F350 2WD, F350 2WD Bed Delete, F350 4WD Bed Delete	CNG or gasoline/E85	Gasoline/E85	IMPSCO Technologies, Inc.	CFMXT06.27HL	CFMXXF0250NBS	CZ9XT06.2BC2-016	CZ9XF0250BCA	CZ9XT06.2BC2	EPA Cert
Ford	2012	6.2	IA Bi-Fuel CNG - Ford: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG or gasoline/E85	Gasoline/E85	IMPSCO Technologies, Inc.	CFMXT06.27HL	CFMXXF0265GAS	CZ9XT06.2BC2-017	CZ9XF0265BCB	CZ9XT06.2BC2	EPA Cert
Ford	2012	6.2	Landi Renzo USA: F250 PICKUP 2WD, F350 2WD, F350 4WD, F350 PICKUP 4WD	CNG or gasoline/E85	Gasoline/E85	Landi Renzo USA Corporation	CFMXT06.27HL	CFMXXR0250NBS	CLDRT06.2C20-002	CLDRR0250NBS	CLDRT06.2C20	EPA Cert
Ford	2012	6.2	Landi Renzo USA: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG or gasoline/E85	Gasoline/E85	Landi Renzo USA Corporation	CFMXT06.27HL	CFMXXF0265GAS	CLDRT06.2C20-003	CLDRF0265GAS	CLDRT06.2C20	EPA Cert
Ford	2012	6.2	Landi Renzo USA: F250 2WD BED DELETE, F250 4WD BED DELETE, F350 2WD, F350 2WD BED DELETE, F350 4WD, F350 4WD BED DELETE	CNG or gasoline/E85	Gasoline/E85	Landi Renzo USA Corporation	CFMXT06.27HL	CFMXXF0250NBS	CLDRT06.2C20-004	CLDRF0250NBS	CLDRT06.2C20	EPA Cert
Ford	2012	6.2	Ford: F250/350 trucks	CNG	Gasoline/E85	PowerFuel CNG Conversions, LLC	CFMXT06.27HL	CFMXTF0250NB; FMXTF0250NBS	DPRFT06.2HL4-010	DPRFF0250N2D	DPRFT06.2HL4	EPA Cert
Ford	2012	6.2	Ford: F250/350 trucks	CNG	Gasoline/E85	PowerFuel CNG Conversions, LLC	CFMXT06.27HL	CFMXXR0250NBS	DPRFT06.2HL4-011	DPRFR0250N2D	DPRFT06.2HL4	EPA Cert
Ford	2012	6.2	Ford: F250/350 trucks	CNG	Gasoline/E85	PowerFuel CNG Conversions, LLC	CFMXT06.27HL	CFMXXF0265GAS	DPRFT06.2HL4-012	DPRFF0265G2D	DPRFT06.2HL4	EPA Cert
Ford	2012	6.2	Ford: F250/350 trucks	CNG or gasoline/E85	Gasoline/E85	PowerFuel CNG Conversions, LLC	CFMXT06.27HL	CFMXXR0250NBS	DPRFT06.2HL3-007	DPRFR0250N2S	DPRFT06.2HL3	EPA Cert
Ford	2012	6.2	Ford: F250/350 trucks	CNG or gasoline/E85	Gasoline/E85	PowerFuel CNG Conversions, LLC	CFMXT06.27HL	CFMXTF0250NB; FMXTF0250NBS	DPRFT06.2HL3-008	DPRFF0250N2S	DPRFT06.2HL3	EPA Cert
Ford	2012	6.2	Ford: F250/350 trucks	CNG or gasoline/E85	Gasoline/E85	PowerFuel CNG Conversions, LLC	CFMXT06.27HL	CFMXXF0265GAS	DPRFT06.2HL3-009	DPRFF0265G2S	DPRFT06.2HL3	EPA Cert
Ford	2012	6.2	Ford: F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 4WD	CNG or gasoline/E85	Gasoline/E85	Westport Light Duty Inc.	CFMXT06.27HL	CFMXXR0250NBS	CJNPT06.2CNG-001	CJNPR0250NBS	CJNPT06.2CNG	EPA Cert
Ford	2012	6.2	Ford: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 2WD, F350 2WD Bed Delete, F350 4WD, F350 4WD Bed Delete	CNG or gasoline/E85	Gasoline/E85	Westport Light Duty Inc.	CFMXT06.27HL	CFMXXF0250NBS	CJNPT06.2CNG-002	CJNPF0250NBS	CJNPT06.2CNG	EPA Cert
Ford	2012	6.2	Ford: F350 Incomplete 2WD, F350 Incomplete 4WD	CNG or gasoline/E85	Gasoline/E85	Westport Light Duty Inc.	CFMXT06.2HL	CFMXXF0265GAS	CJNPT06.2CNG-003	CJNPF0265GAS	CJNPT06.2CNG	EPA Cert
Ford	2012	5.4, 4.6	Altech-Eco Corporation: E250 Cutaway, E350 Cutaway	CNG	Gasoline/E85	Altech-Eco Corporation	CFMXT05.45HK; CFMXT04.65H9	CFMXXF0265NBS	CAECT05.45HB-015	CAECF0265NB1	CAECT05.45HB	EPA Cert
Ford	2012	5.4, 4.6	AEC: E350 Van Altech-Eco Corporation: E150 Van, E150 Wagon, E250 Van, E350 Van, E350 Wagon	CNG	Gasoline/E85	Altech-Eco Corporation	CFMXT05.45HK; CFMXT05.45HL; CFMXT04.65H9	CFMXXR0265NBD	CAECT05.45HB-016	CAECR0265NB3	CAECT05.45HB	EPA Cert

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2012	6.2, 5.4	BAF_Bifuel: E250/350	CNG or gasoline/E85	Gasoline/E85	BAF Technologies	CFMXT05.45HK	CFM XR0265NBD	CBAFT06.254B-004	CBAFR0265NBD	CBAFT06.254B	EPA Cert
Ford	2012	6.2, 5.4	BAF_Bifuel: E250/350	CNG or gasoline/E85	Gasoline/E85	BAF Technologies	CFMXT05.45HK	CFM XF0265NBS	CBAFT06.254B-005	CBAFF0265NBS	CBAFT06.254B	EPA Cert
Ford	2012	6.2, 5.4	BAF_Bifuel: F250/350; E250/350	CNG or gasoline/E85	Gasoline/E85	BAF Technologies	CFMXT06.27HL	CFM XF0265GAS	CBAFT06.254B-006	CBAFF0265GAS	CBAFT06.254B	EPA Cert
Ford	2012	6.2, 5.4	BAF_Bifuel: F250/350; E250/350	CNG or gasoline/E85	Gasoline/E85	BAF Technologies	CFMXT06.27HL	CFM XR0250NBS	CBAFT06.254B-007	CBAFR0250NBS	CBAFT06.254B	EPA Cert
Ford	2012	6.2, 5.4	BAF_Bifuel: F250/350; E250/350	CNG or gasoline/E85	Gasoline/E85	BAF Technologies	CFMXT06.27HL	CFM XF0250NBS	CBAFT06.254B-008	CBAFF0250NBS	CBAFT06.254B	EPA Cert
Ford	2011	2.0	Altech-Eco Corporation: Transit Connect	CNG	Gasoline	Altech-Eco Corporation	BFMXT02.01DV	BFM XR0125NBB	CAECT02.01DA-018	CAECR0125NB2	CAECT02.01DA	EPA Cert
Ford	2011	2.0	Altech-Eco Corporation: Transit Connect	CNG or gasoline	Gasoline	Altech-Eco Corporation	BFMXT02.01DV	BFM XR0125NBB	CAECT02.01DV-017	CAECR0125NBB	CAECT02.01DV	EPA Cert
Ford	2011	2.0	BAF Technologies: Ford Transit Connect	CNG	Gasoline	BAF Technologies	BFMXT02.01DV	BFM XR0125NBB	BBAFT02.01DV-003	BBAFR0000001	BBAFT02.01DV	EPA Cert, CARB
Ford	2011	2.0	CNG - Dedicated Ford: Ford Transit Connect	CNG	Gasoline	EvoTek LLC	BFMXT02.01DV	BFM XR0125NBB	BETKT02.0N1A-002	BETKR0000N1A	BETKT02.0N1A	EPA Cert
Ford	2011	2.5	Altech-Eco Corporation: Fusion, Fusion S FWD, Milan, Milan S FWD	CNG	Gasoline	Altech-Eco Corporation	BFM XV02.5VEN	BFM XR0155GAV	BAECV02.5VEB-022	BAECR0155GA1	BAECV02.5VEB	EPA Cert
Ford	2011	2.5	Altech-Eco Corporation: Escape 4WD, Escape FWD, Mariner 4WD, Mariner FWD, Tribute 4WD, Tribute FWD	CNG	Gasoline	Altech-Eco Corporation	BFMXT02.51EN	BFM XR0125NBV	BAECV02.5VEB-023	BAECR0125NB1	BAECV02.5VEB	EPA Cert
Ford	2011	2.5	Altech-Eco Corporation: Fusion, Fusion S FWD, Milan, Milan S FWD	CNG or gasoline	Gasoline	Altech-Eco Corporation	BFM XV02.5VEN	BFM XR0155GAV	BAECV02.5VEN-020	BAECR0155GAV	BAECV02.5VEN	EPA Cert
Ford	2011	2.5	Altech-Eco Corporation: Escape 4WD, Escape FWD, Mariner 4WD, Mariner FWD, Tribute 4WD, Tribute FWD	CNG or gasoline	Gasoline	Altech-Eco Corporation	BFMXT02.51EN	BFM XR0125NBV	BAECV02.5VEN-021	BAECR0125NBV	BAECV02.5VEN	EPA Cert
Ford	2011	2.5	CNG - Dedicated Ford / Lincoln / Mercury: Ford Escape 4WD, Ford Escape FWD, Mazda Tribute 4WD, Mazda Tribute FWD	CNG	Gasoline	EvoTek LLC	BFMXT02.51EN	BFM XR0125NBV	BETKT02.5C1A-007	BETKR0000E1H	BETKT02.5C1A	EPA Cert
Ford	2011	2.5	CNG - Dedicated Ford / Lincoln / Mercury: Ford Fusion, Ford Fusion S	CNG	Gasoline	EvoTek LLC	BFM XV02.5VEN	BFM XR0155GAV	BETKV02.5C1A-008	BETKR0000E1I	BETKV02.5C1A	EPA Cert
Ford	2011	3.7	CNG - Dedicated Ford / Lincoln / Mercury: Ford F150 4WD, Ford F150 Pickup 2WD	CNG	Gasoline/E85	EvoTek LLC	BFMXT03.73DP	BFM XR0265NBV	BETKT03.7N1A-012	BETKR0000E1F	BETKT03.7N1A	EPA Cert
Ford	2011	4.6	CNG - Dedicated Ford / Lincoln / Mercury: Crown Victoria FFV, Crown Victoria Police FFV, Grand Marquis FFV, Town Car FFV	CNG	Gasoline/E85	EvoTek LLC	BFM XV04.6VDF; BFM XV04.6VHF	BFM XR0115GAA	BETKV04.6N1A-006		BETKV04.6N1A	EPA Cert
Ford	2011	4.6	Bi-Fuel CNG - Ford / Lincoln / Mercury: Crown Victoria, Crown Victoria Police, Grand Marquis, Town Car	CNG or gasoline/E85	Gasoline/E85	EvoTek LLC	BFM XV04.6VDF; BFM XV04.6VHF	BFM XR0115GAA	BETKV04.6BCA-010	BETKR0115E1J	BETKV04.6BCA	EPA Cert
Ford	2011	4.6	Go Natural CNG: Crown Victoria, Crown Victoria Police, Grand Marquis, Town Car	CNG	Gasoline/E85	Go Natural CNG, LLC	BFM XV04.6VDF	BFM XR0115GAA	CGNLV04.6F1B-004	CGNLR0115F1B	CGNLV04.6F1B	EPA Cert
Ford	2011	4.6	Go Natural CNG: Crown Victoria, Crown Victoria Police, Grand Marquis, Town Car	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	BFM XV04.6VDF	BFM XR0115GAA	CGNLV04.6F2B-005	CGNLR0115F2B	CGNLV04.6F2B	EPA Cert
Ford	2011	5.0	AEC: F150 Pickup 2WD Altech-Eco Corporation: F150 Pickup 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT05.03DD	BFM XR0265NBV	BAECT05.03DA-030-R01	BAECR0265NB1	BAECT05.03DA	EPA Cert
Ford	2011	5.0	AEC: F150 Pickup 2WD Altech-Eco Corporation: F150 Pickup 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	BFMXT05.03DD	BFM XR0265NBV	BAECT05.03DD-031	BAECR0265NBV	BAECT05.03DD	EPA Cert
Ford	2011	5.0	IA Bi-Fuel CNG - Ford: F150 Pickup 2WD, F150 Pickup 4WD	CNG or gasoline/E85	Gasoline/E85	IMPSCO Technologies, Inc.	BFMXT05.03DD	BFM XR0265NGV	BZ9XT05.0BNA-052	BZ9XR0265CB1	BZ9XT05.0BNA	EPA Cert
Ford	2011	5.4	AEC: E350 Van Altech-Eco Corporation: E150 Van, E150 Wagon, E250 Van, E350 Van, E350 Wagon	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT05.45HK; BFMXT05.45HL	BFM XR0265NBD	CAECT05.45HA-001	CAECR0265NBD	CAECT05.45HA	EPA Cert
Ford	2011	5.4	Altech-Eco Corporation: E350 Cutaway	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT05.45HK; BFMXT05.45HL	BFM XF0265NBS	CAECT05.45HA-002	CAECF0265NBS	CAECT05.45HA	EPA Cert
Ford	2011	5.4	BAF Technologies: Ford E-Series Van and Club Wagon 150, 250, 350, E 350 Cutaway	CNG	Gasoline/E85	BAF Technologies	BFMXT05.45HK	BFM XR0265NBD; BFM XF0265NBS	BBAFT05.45HK-004	BBAFR0000001	BBAFT05.45HK	EPA Cert, CARB
Ford	2011	5.4	CNG - Dedicated Ford: Ford Econoline 250/350	CNG	Gasoline/E85	EvoTek LLC	BFMXT05.45HL; BFMXT05.45HK	BFM XR0265NBD	BETKT05.4N1A-001	BETKR0000N1B	BETKT05.4N1A	EPA Cert
Ford	2011	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, Navigator 2WD, Navigator 4WD	CNG	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.44HY; BFMXT05.44BC	BFM XR0265NBC	BGNLT05.4F3B-018-R01	BGNLR0265F3B	BGNLT05.4F3B	EPA Cert
Ford	2011	5.4	Go Natural CNG: E150 Van, E150 Wagon, E250 Van, E350 Cutaway, E350 Van, E350 Wagon, Expedition 2WD, Navigator 2WD	CNG	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.45BR; BFMXT05.45HK; BFMXT05.45HL	BFM XR0265NBC; BFM XR0265NBD; BFM XF0265NBS	CGNLT05.4F1B-002	CGNLR0000000	CGNLT05.4F1B	EPA Cert
Ford	2011	5.4	Go Natural CNG: E350 Van	CNG or gasoline	Gasoline	Go Natural CNG, LLC	BFMXT05.45HL	BFM XR0265NBD	BGNLT05.4F9B-016	BGNLR0265FAB	BGNLT05.4F9B	EPA Cert

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2011	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, Navigator 2WD, Navigator 4WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.44BC	BFMXR0265NBC	BGNLT05.4F4B-005	BGNLR0265F4B	BGNLT05.4F4B	EPA Cert
Ford	2011	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, Navigator 2WD, Navigator 4WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.44HY	BFMXR0265NBC	BGNLT05.4F5B-006	BGNLR0265F5B	BGNLT05.4F5B	EPA Cert
Ford	2011	5.4	Go Natural CNG: E350 Cutaway	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.45HK	BFMXF0265NBS	BGNLT05.4F6B-008	BGNLF0265FDB	BGNLT05.4F6B	EPA Cert
Ford	2011	5.4	Go Natural CNG: E150 Van, E150 Wagon, E250 Van, E350 Van, E350 Wagon	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.45HK	BFMXR0265NBD	BGNLT05.4F6B-009	BGNLR0265FCB	BGNLT05.4F6B	EPA Cert
Ford	2011	5.4	Go Natural CNG: Expedition 2WD, Navigator 2WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	BFMXT05.45BR	BFMXR0265NBC	BGNLT05.4F6B-010	BGNLR0265FBB	BGNLT05.4F6B	EPA Cert
Ford	2011	5.4	IA Bi-Fuel CNG - Ford: Ford E150 Van, Ford E150 Wagon, Ford E250 Van, Ford E350 Van, Ford E350 Wagon	CNG or gasoline/E85	Gasoline/E85	IMPSCO Technologies, Inc.	BFMXT05.45HK	BFMXR0265NBD	BZ9XT05.4CB1-057	BZ9XR0265BCC	BZ9XT05.4CB1	EPA Cert
Ford	2011	5.4	Landi Renzo USA: E150 VAN CNG, E150 WAGON CNG, E250 VAN CNG, E350 CUTAWAY CNG, E350 VAN CNG, E350 WAGON CNG	CNG	Gasoline	Landi Renzo USA Corporation	BFMXT05.45HK		BLDRT05.4A10-001	BLDRT0000A10	BLDRT05.4A10	EPA Cert, CARB
Ford	2011	5.4	Landi Renzo USA: E150 VAN CNG, E150 WAGON CNG, E250 VAN CNG, E350 CUTAWAY CNG, E350 VAN CNG, E350 WAGON CNG	CNG	Gasoline/E85	Landi Renzo USA Corporation	BFMXT05.45HK	BFMXR0265NBD; BFMXF0265NBS	BLDRT05.4A11-003	BLDRT0000A11	BLDRT05.4A11	EPA Cert, CARB
Ford	2011	6.2	Altech-Eco Corporation: F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT06.27HL	BFMXR0250NBS	BAECT06.27HA-027	BAECR0250NB3	BAECT06.27HA	EPA Cert
Ford	2011	6.2	Altech-Eco Corporation: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 4WD Bed Delete, F350 2WD, F350 2WD Bed Delete, F350 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT06.27HL	BFMXF0250NBS	BAECT06.27HA-028	BAECF0250NB3	BAECT06.27HA	EPA Cert
Ford	2011	6.2	Altech-Eco Corporation: F350 Incomplete 2WD, F350 Incomplete 4WD	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT06.27HL	BFMXF0265GAS	BAECT06.27HA-029	BAECF0265GA1	BAECT06.27HA	EPA Cert
Ford	2011	6.2	Altech-Eco Corporation: F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	BFMXT06.27HL	BFMXR0250NBS	BAECT06.27HL-024	BAECR0250NB2	BAECT06.27HL	EPA Cert
Ford	2011	6.2	Altech-Eco Corporation: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 4WD Bed Delete, F350 2WD, F350 2WD Bed Delete, F350 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	BFMXT06.27HL	BFMXF0250NBS	BAECT06.27HL-025	BAECF0250NB2	BAECT06.27HL	EPA Cert
Ford	2011	6.2	Altech-Eco Corporation: F350 Incomplete 2WD, F350 Incomplete 4WD	CNG or gasoline/E85	Gasoline/E85	Altech-Eco Corporation	BFMXT06.27HL	BFMXF0265GAS	BAECT06.27HL-026	BAECF0265GAS	BAECT06.27HL	EPA Cert
Ford	2011	6.2	BAF Technologies: Ford F250/350	CNG	Gasoline	BAF Technologies	BFMXT06.27HL	BFMXR0250NBS; BFMXF0250NBS; BFMXF0265GAS	BBAFT06.27HL-005	BBAFR0000001	BBAFT06.27HL	EPA Cert
Ford	2011	6.2	CNG - Dedicated Ford: Ford F250/F350	CNG	Gasoline/E85	EvoTek LLC	BFMXT06.27HL	BFMXR0250NBS; BFMXF0250NBS; BFMXF0265GAS	BETKT06.2N2A-003	BETKR0000E1C	BETKT06.2N2A	EPA Cert
Ford	2011	6.2	CNG - Dedicated Ford / Lincoln / Mercury: F150 Raptor Pickup 4WD, Ford F150 4WD, Ford F150 Pickup 2WD	CNG	Gasoline	EvoTek LLC	BFMXT06.24D2	BFMXR0265NBV	BETKT06.2DNH-013	BETKR0000HDT	BETKT06.2DNH	EPA Cert
Ford	2011	6.2	Bi-Fuel CNG - Ford / Lincoln / Mercury: Ford F250/F350	CNG or gasoline	Gasoline/E85	EvoTek LLC	BFMXT06.27HL	BFMXF0250NBS	BETKT06.2B2A-009	BETKR0000E1D	BETKT06.2B2A	EPA Cert
Ford	2011	6.2	Ford: F250/350 trucks	CNG	Gasoline/E85	PowerFuel CNG Conversions, LLC	BFMXT06.27HL	BFMXF0250NBD	DPRFT06.2HL2-004	DPRFF0250NBD	DPRFT06.2HL2	EPA Cert
Ford	2011	6.2	Ford: F250/350 trucks	CNG	Gasoline/E85	PowerFuel CNG Conversions, LLC	BFMXT06.27HL	BFMXF0265GAS	DPRFT06.2HL2-005	DPRFF0265GAD	DPRFT06.2HL2	EPA Cert
Ford	2011	6.2	Ford: F250/350 trucks	CNG	Gasoline/E85	PowerFuel CNG Conversions, LLC	BFMXT06.27HL	BFMXR0250NBD	DPRFT06.2HL2-006	DPRFR0250NBD	DPRFT06.2HL2	EPA Cert
Ford	2011	6.2	Ford: F250/350 trucks	CNG or gasoline/E85	Gasoline/E85	PowerFuel CNG Conversions, LLC	BFMXT06.27HL	BFMXR0250NBS	DPRFT06.2HL1-001	DPRFR0250NBS	DPRFT06.2HL1	EPA Cert
Ford	2011	6.2	Ford: F250/350 trucks	CNG or gasoline/E85	Gasoline/E85	PowerFuel CNG Conversions, LLC	BFMXT06.27HL	BFMXF0250NBS	DPRFT06.2HL1-002	DPRFF0250NBS	DPRFT06.2HL1	EPA Cert
Ford	2011	6.2	Ford: F250/350 trucks	CNG or gasoline/E85	Gasoline/E85	PowerFuel CNG Conversions, LLC	BFMXT06.27HL	BFMXF0265GAS	DPRFT06.2HL1-003	DPRFF0265GAS	DPRFT06.2HL1	EPA Cert
Ford	2011	5.4, 4.6	Altech-Eco Corporation: E150 Van, E150 Wagon, E250 Van, E350 Van, E350 Wagon	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT05.45HK; BFMXT05.45HL; BFMXT04.65H9	BFMXR0265NBD	BAECT05.45HA-032	BAECR0265NB3	BAECT05.45HA	EPA Cert
Ford	2011	5.4, 4.6	Altech-Eco Corporation: E250 Cutaway, E350 Cutaway	CNG	Gasoline/E85	Altech-Eco Corporation	BFMXT05.45HK; BFMXT04.65H9	BFMXF0265NBS	BAECT05.45HA-033	BAECF0265NB1	BAECT05.45HA	EPA Cert

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2011	5.4, 6.2	BAF_Bifuel: F250/350; E250/350	CNG or gasoline/E85	Gasoline/E85	BAF Technologies	BFMXT06.27HL; BFMXT05.45HK	BFMXR0250NBS; BFMXF0250NBS; BFMXF0265GAS; BFMXR0265NBD; BFMXF0265NBS	BBAFT06.254B-006-R01	BBAFR0000002	BBAFT06.254B	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Transit Connect	CNG	Gasoline	Altech-Eco Corporation	AFMXT02.01DV	AFMXR0125NBB	AAECT02.01DA-008	AAECR0125NB1	AAECT02.01DA	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Focus	CNG	Gasoline	Altech-Eco Corporation	AFMXV02.0VZX	AFMXR0110GCX	AAECV02.0VZA-002	AAECR0125NC1	AAECV02.0VZA	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Focus	CNG	Gasoline	Altech-Eco Corporation	AFMXV02.0VDX	AFMXR0125NAA	AAECV02.0VZA-003	AAECR0125NA1	AAECV02.0VZA	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Focus	CNG	Gasoline	Altech-Eco Corporation	AFMXV02.0VEC	AFMXR0110GAA	BAECV02.0VEA-019	BAECR0110GA1	BAECV02.0VEA	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Transit Connect	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXT02.01DV		AAECT02.01DV-007	AAECR0125NBB	AAECT02.01DV	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Focus	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXV02.0VDX	AFMXR0125NAA	AAECV02.0VDX-004	AAECR0125NAA	AAECV02.0VDX	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Focus	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXV02.0VZX	AFMXR0125NCX	AAECV02.0VZX-001	AAECR0125NCX	AAECV02.0VZX	EPA Cert
Ford	2010	2.0	Altech-Eco Corporation: Focus	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXV02.0VEC	AFMXR0110GAA	BAECV02.0VEC-018	BAECR0110GAA	BAECV02.0VEC	EPA Cert
Ford	2010	2.0	CNG - Dedicated: Ford Transit Connect	CNG	Gasoline	EvoTek LLC	AFMXT02.01DV	AFMXR125NBB	AETKT02.0N1A-002	AETKR0000N1A	AETKT02.0N1A	EPA Cert
Ford	2010	2.0	CNG - Dedicated: Ford Focus	CNG	Gasoline	EvoTek LLC	AFMXV02.0VEC; AFMXV02.0VZX	AFMXR0110GAA; AFMXR0125NCX	AETKV02.0N1A-003	AETKR0000N1C	AETKV02.0N1A	EPA Cert

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2010	2.0	IMPSCO Technologies, Inc.: Ford Transit Connect	CNG or gasoline	Gasoline	IMPSCO Technologies, Inc.	AFMXT02.01DV	AFMXR0125NBB	CZ9XT02.0FFA-001	CZ9XR0125FFA	CZ9XT02.0FFA	EPA Cert
Ford	2010	2.5	Altech-Eco Corporation: Fusion, Milan	CNG	Gasoline	Altech-Eco Corporation	AFMXV02.5VEF	AFMXR0155GAV	BAECV02.5VEA-001	BAECR0155GA1	BAECV02.5VEA	EPA Cert
Ford	2010	2.5	Altech-Eco Corporation: Fusion FWD, Fusion S FWD, Milan FWD, Milan S FWD	CNG	Gasoline	Altech-Eco Corporation	AFMXV02.5VEN	AFMXR0155GAV	CAECV02.51EA-005	CAECR0155GA1	CAECV02.51EA	EPA Cert
Ford	2010	2.5	Altech-Eco Corporation: Escape 4WD, Escape FWD, Mariner 4WD, Mariner FWD, Tribute 4WD, Tribute FWD	CNG	Gasoline	Altech-Eco Corporation	AFMXT2.51EN	AFMXR0125NBV	CAECV02.51EA-006	CAECR0125NB1	CAECV02.51EA	EPA Cert
Ford	2010	2.5	Altech-Eco Corporation: Fusion, Milan	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXV02.5VEF	AFMXR0155GAV	BAECV02.5VEF-002	BAECR0155GAV	BAECV02.5VEF	EPA Cert
Ford	2010	2.5	Altech-Eco Corporation: Fusion FWD, Fusion S FWD, Milan FWD, Milan S FWD	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXV02.5VEN	AFMXR0155GAV	CAECV02.51EN-003	CAECR0155GAV	CAECV02.51EN	EPA Cert
Ford	2010	2.5	Altech-Eco Corporation: Escape 4WD, Escape FWD, Mariner 4WD, Mariner FWD, Tribute 4WD, Tribute FWD	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXT02.51EN	AFMXR0125NBV	CAECV02.51EN-004	CAECR0125NBV	CAECV02.51EN	EPA Cert
Ford	2010	4.6	Altech-Eco Corporation: F150 Pickup 2WD, F150 Pickup 4WD, F150 SFE 2WD	CNG	Gasoline	Altech-Eco Corporation	AFMXT04.64D3; AFMXT04.63DF; AFMXT04.63D2	AFMXR0265NBC	BAECT04.64DB-017	BAECR0265NB2	BAECT04.64DB	EPA Cert
Ford	2010	4.6	BAF Technologies: Town Car, Crown Victoria, Grand Marquis, Town Car Limo	CNG	Gasoline/E 85	BAF Technologies	AFMXV04.6VDF; AFMXV04.6VE3	AFMXR0115GAA	ABAFV04.61FN-003	ABAFR0000001	ABAFV04.61FN	EPA Cert, CARB
Ford	2010	4.6	CROWN VICTORIA, CROWN VICTORIA POLICE, GRAND MARQUIS, TOWN CAR	CNG	Gasoline, Ethanol	Go Natural CNG	AFMXV04.6VDF	AFMXR0115GAA		CGNLR0115F1A	CGNLRV04.6F1A	Int Appr
Ford	2010	4.6	Mustang	CNG	Gasoline	Go Natural CNG	AFMXV04.6VDM	AFMXR0125NCA		CGNLR0125F1A	CGNLRV04.6F1A	Int Appr
Ford	2010	4.6	Go Natural CNG: Crown Victoria, Crown Victoria Police, Grand Marquis, Town Car	CNG or gasoline	Gasoline/E 85	Go Natural CNG, LLC	AFMXV04.6VDF	AFMXR0115GAA	BGNLV04.6F2A-001	BGNLR0115F2A	BGNLV04.6F2A	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG	Gasoline	Altech-Eco Corporation	AFMXD05.47V8	AFMXF0120GAS	BAECD05.46VA-003	BAECF0120GA1	BAECD05.46VA	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F250 2WD BED DELETE, F250 4WD BED DELETE, F350 2WD, F350 2WD BED DELETE, F350 4WD, F350 4WD BED DELETE	CNG	Gasoline	Altech-Eco Corporation	AFMXD05.46VX; AFMXD05.47V8; AFMXD05.47VT	AFMXF0250NBS	BAECD05.46VA-004	BAECF0250NB1	BAECD05.46VA	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG	Gasoline	Altech-Eco Corporation	AFMXD05.46VX; AFMXD05.47V8; AFMXD05.47VT	AFMXF0260GAS	BAECD05.46VA-005	BAECF0260GA1	BAECD05.46VA	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F250 PICKUP 2WD, F250 PICKUP 4WD, F350 2WD, F350 4WD	CNG	Gasoline	Altech-Eco Corporation	AFMXD05.46VX	AFMXR0250NBS	BAECD05.46VA-006	BAECR0250NB1	BAECD05.46VA	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F250 2WD BED DELETE, F250 4WD BED DELETE, F350 2WD BED DELETE, F350 4WD BED DELETE	CNG	Gasoline	Altech-Eco Corporation	AFMXD05.46VR	AFMXF0250NBS	BAECT05.46VB-013	BAECF0250NB1	BAECT05.46VB	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F250 PICKUP 2WD, F250 PICKUP 4WD, F350 2WD, F350 4WD	CNG	Gasoline	Altech-Eco Corporation	AFMXD05.46VR	AFMXR0250NBS	BAECT05.46VB-014	BAECR0250NB1	BAECT05.46VB	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: E150 Van, E150 Wagon, E250 Van, E350 Van, E350 Wagon	CNG	Gasoline/E 85	Altech-Eco Corporation	AFMXT05.45H4; AFMXT05.45HJ	AFMXR0265NAD	BAECT05.46VB-015	BAECR0265NA1	BAECT05.46VB	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: E350 Cutaway	CNG	Gasoline/E 85	Altech-Eco Corporation	AFMXT05.45H4; AFMXT05.45HJ	AFMXF0265NAS	BAECT05.46VB-016	BAECF0265NA1	BAECT05.46VB	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F250 2WD BED DELETE, F250 4WD BED DELETE, F350 2WD BED DELETE, F350 4WD BED DELETE	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXD05.46VX; AFMXD05.46VR	AFMXF0250NBS	BAECD05.46VX-010	BAECF0250NBS	BAECD05.46VX	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXD05.46VX; AFMXD05.46VR	AFMXF0260GAS	BAECD05.46VX-011	BAECF0260GAS	BAECD05.46VX	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F250 PICKUP 2WD, F250 PICKUP 4WD, F350 2WD, F350 4WD	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXD05.46VX; AFMXD05.46VR	AFMXR0250NBS	BAECD05.46VX-012	BAECR0250NBS	BAECD05.46VX	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXD05.47V8	AFMXF0120GAS	BAECD05.47V8-007	BAECF0120GAS	BAECD05.47V8	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F350 2WD, F350 2WD BED DELETE, F350 4WD, F350 4WD BED DELETE	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXD05.47V8; AFMXD05.47VT	AFMXF0250NBS	BAECD05.47V8-008	BAECF0250NBS	BAECD05.47V8	EPA Cert
Ford	2010	5.4	Altech-Eco Corporation: F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	CNG or gasoline	Gasoline	Altech-Eco Corporation	AFMXD05.47V8; AFMXD05.47VT	AFMXF0260GAS	BAECD05.47V8-009	BAECF0260GAS	BAECD05.47V8	EPA Cert
Ford	2010	5.4	BAF Technologies: F-150, Expedition, Navigator	CNG	Gasoline	BAF Technologies	AFMXT05.44BC	AFMXR0265NBC	ABAFV05.41FN-002	ABAFR0000001	ABAFV05.41FN	EPA Cert, CARB
Ford	2010	5.4	BAF Technologies: Econoline E150, 250, 350, E150 Club Wagon, E350 Club Wagon, E350 Cutaway	CNG	Gasoline	BAF Technologies	AFMXT05.45H4		ABAFV05.42FN-001	ABAFR0000001	ABAFV05.42FN	EPA Cert, CARB
Ford	2010	5.4	CNG - Dedicated: Ford Econoline 250/350	CNG	Gasoline	EvoTek LLC	AFMXT05.45H4	AFMXR0265NAS	AETKT05.4N1A-001	AETKR0000N1A	AETKT05.4N1A	EPA Cert
Ford	2010	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, F150 2WD, F150 4WD, Navigator 2WD, Navigator 4WD	CNG	Gasoline/E 85	Go Natural CNG, LLC	AFMXT05.44ET; AFMXT05.44HY; AFMXT05.44BC	AFMXR0265NBC	BGNLT05.4F1A-017	BGNLR0265F1A	BGNLT05.4F1A	EPA Cert
Ford	2010	5.4	Go Natural CNG: E150 Van, E150 Wagon, E250 Van, E350 Cutaway, E350 Van, E350 Wagon, Expedition 2WD, F250 2WD Bed Delete, F250 4WD Bed Delete, F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 2WD Bed Delete, F350 4WD, F350 4WD Bed Delete, F350 Incomplete 2WD, F350 Incomplete 4WD, Navigator 2WD	CNG	Gasoline/E 85	Go Natural CNG, LLC	AFMXD05.46VR; AFMXD05.46VX; AFMXT05.45B8; AFMXT05.45HJ; AFMXT05.45H4	AFMXF0250NBS; AFMXR0250NBS; AFMXF0260GAS; AFMXR0265NBC; AFMXF0265NAS; AFMXR0265NAD	CGNLT05.4F1A-001	CGNLR0000000	CGNLT05.4F1A	EPA Cert
Ford	2010	5.4	Go Natural CNG: F250 2WD Bed Delete, F250 4WD Bed Delete, F350 2WD Bed Delete, F350 4WD Bed Delete	CNG or gasoline	Gasoline	Go Natural CNG, LLC	AFMXD05.46VR; AFMXD05.46VX	AFMXF0250NBS	BGNLD05.4F7A-007	BGNLF0250FAA	BGNLD05.4F7A	EPA Cert

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2010	5.4	Go Natural CNG: F350 Incomplete 2WD, F350 Incomplete 4WD	CNG or gasoline	Gasoline	Go Natural CNG, LLC	AFMXD05.46VX	AFMXF0260GAS	BGNLD05.4F7A-011	BGNLF0260FBA	BGNLD05.4F7A	EPA Cert
Ford	2010	5.4	Go Natural CNG: F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 4WD	CNG or gasoline	Gasoline	Go Natural CNG, LLC	AFMXD05.46VR; AFMXD05.46VX	AFMXR0250NBS	BGNLD05.4F7A-012	BGNLR0250FCA	BGNLD05.4F7A	EPA Cert
Ford	2010	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, F150 2WD, F150 4WD, Navigator 2WD, Navigator 4WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	AFMXT05.44BC	AFMXR0265NBS	BGNLT05.4F2A-003	BGNLR0265F2A	BGNLT05.4F2A	EPA Cert
Ford	2010	5.4	Go Natural CNG: Expedition 2WD, Navigator 2WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	AFMXT05.45BR	AFMXR0265NBS	BGNLT05.4F3A-013-R02	BGNLR0265FDA	BGNLT05.4F3A	EPA Cert
Ford	2010	5.4	Go Natural CNG: E150 Van, E150 Wagon, E250 Van, E350 Van, E350 Wagon	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	AFMXT05.45HJ; AFMXT05.45H4	AFMXR0265NAD	BGNLT05.4F3A-014-R02	BGNLR0265FEA	BGNLT05.4F3A	EPA Cert
Ford	2010	5.4	Go Natural CNG: E350 Cutaway	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	AFMXT05.45HJ; AFMXT05.45H4	AFMXF0265NAS	BGNLT05.4F3A-015-R02	BGNLF0265FFA	BGNLT05.4F3A	EPA Cert
Ford	2010	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, F150 2WD, F150 4WD, Navigator 2WD, Navigator 4WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	AFMXT05.44ET	AFMXR0265NBS	BGNLT05.4F4A-004-R01	BGNLR0265F4A	BGNLT05.4F4A	EPA Cert
Ford	2010	5.4	Go Natural CNG: Expedition 2WD, Expedition 4WD, Navigator 2WD, Navigator 4WD	CNG or gasoline/E85	Gasoline/E85	Go Natural CNG, LLC	AFMXT05.44HY	AFMXR0265NBS	BGNLT05.4F6A-002	BGNLR0265F6A	BGNLT05.4F6A	EPA Cert
Ford	2010	5.4	IMPCO Technologies, Inc.: Ford E350 CUTAWAY FFV	CNG or gasoline/E85	Gasoline/E85	IMPCO Technologies, Inc.	AFMXT05.45H4	AFMXF0265NAS	BZ9XT05.4F2A-032	BZ9XF0265F2A	BZ9XT05.4F2A	EPA Cert
Ford	2010	5.4	IMPCO Technologies, Inc.: FORD EXPEDITION 2WD FFV, FORD EXPEDITION 4WD FFV, FORD F150 FFV 2WD, FORD F150 FFV 4WD, LINCOLN NAVIGATOR 2WD FFV, LINCOLN NAVIGATOR 4WD FFV	CNG or gasoline	Gasoline	IMPCO Technologies, Inc.	AFMXT05.44BC	AFMXR0265NBS	BZ9XT05.4F4A-038	BZ9XR0265FFA	BZ9XT05.4F4A	EPA Cert
Ford	2010	5.4	IMPCO Technologies, Inc.: Ford E150 VAN FFV, Ford E150 WAGON FFV, Ford E250 VAN FFV, Ford E350 VAN FFV	CNG or gasoline/E85	Gasoline/E85	IMPCO Technologies, Inc.	AFMXT05.45H4	AFMXR0265NAD	BZ9XT05.4F2A-031	BZ9XR0265F2A	BZ9XT05.4F2A	EPA Cert
Ford	2010	5.4	IMPCO Technologies, Inc.: Ford E350 CUTAWAY FFV	CNG or gasoline/E85	Gasoline/E85	IMPCO Technologies, Inc.	AFMXT05.45HJ	AFMXF0265NAS	BZ9XT05.4F6A-042	BZ9XF0265F2A	BZ9XT05.4F6A	EPA Cert
Ford	2010	5.4	IMPCO Technologies, Inc.: Ford E150 VAN FFV, Ford E150 WAGON FFV, Ford E250 VAN FFV, Ford E350 VAN FFV, Ford E350 WAGON FFV	CNG or gasoline/E85	Gasoline/E85	IMPCO Technologies, Inc.	AFMXT05.45HJ	AFMXR0265NAD	BZ9XT05.4F6A-043	BZ9XR0265F2A	BZ9XT05.4F6A	EPA Cert
Ford	2010	5.4	IMPCO Technologies, Inc.: FORD EXPEDITION 2WD FFV, FORD EXPEDITION 4WD FFV, FORD F150 FFV 2WD, FORD F150 FFV 4WD, LINCOLN NAVIGATOR 2WD FFV, LINCOLN NAVIGATOR 4WD FFV	CNG or gasoline/E85	Gasoline/E85	IMPCO Technologies, Inc.	AFMXT05.44ET	AFMXR0265NBS	BZ9XT05.4FFA-016	BZ9XR0265FFA	BZ9XT05.4FFA	EPA Cert
Ford	2010	5.4	NGV Conversion, Inc.: E-Series Van, complete or incomp	CNG	Gasoline/E85	NGV Motori	AFMXT05.45HJ	AFMXR0265NAD	BNGCT05.45HJ-003	BNGCR0000001	BNGCT05.45HJ	EPA Cert
Ford	2010	6.8	E-450	CNG	Gasoline	BAF Technologies	AFMXE06.8BWV	AFMXF0265NAT	BAF-ONHWY-10-01	ABAFF0000001	ABAFE06.89FN	EPA Cert
Ford	2010	6.8	FORD: E350 VAN, E350 WAGON	CNG or gasoline/E85	Gasoline/E85	PARNELL USA, INC	AFMXT06.85HG	AFMXR0265NAD	BPRLT06.85HG-002	BPRLR0265NAD	BPRLT06.85HG	EPA Cert
Ford	2009	2.0	Altech-Eco Corporation: Focus	CNG or gasoline	Gasoline	Altech-Eco Corporation	9FMXV02.0VD4; 9FMXV02.0VDX	9FMXR0125NAA	AAECV02.0VDF-005	AAECR0125NAA	AAECV02.0VDF	EPA Cert
Ford	2009	2.0	Altech-Eco Corporation: Focus	CNG or gasoline	Gasoline	Altech-Eco Corporation	9FMXV02.0VZP; 9FMXV02.0VZX	9FMXR0125NCX	AAECV02.0VDG-006	AAECR0125NCX	AAECV02.0VDG	EPA Cert
Ford	2009	2.0	NGV Conversion, Inc.: FOCUS	CNG	Gasoline	NGV Conversion, Inc.	9FMXV02.0VZP; 9FMXV02.0VZX	9FMXR0125NCX	ANGCV02.0VZP-002	ANGCR0000CNG	ANGCV02.0VZP	EPA Cert
Ford	2009	2.0	NGV Conversion, Inc.: FOCUS	CNG	Gasoline	NGV Conversion, Inc.	9FMXV02.0VZP; 9FMXV02.0VZX	9FMXR0125NCX	BNGCV02.0VZP-002	BNGCR0000CNG	BNGCV02.0VZP	EPA Cert
Ford	2009	4.6	Town Car, Crown Victoria, Grand Marquis	CNG	Gasoline	BAF Technologies	9FMXV04.6VDF; 9FMXV04.6VE3	9FMXR0115GAA	BBAFV04.61CN-002	BBAFR0000001	BBAFV04.61CN	EPA Cert, CARB
Ford	2009	4.6	BAF Technologies: Town Car/Crown Victoria	CNG	Gasoline	BAF Technologies	9FMXV04.6VDF; 9FMXV04.6VE3	9FMXR0115GAA	BBAFV04.61FN-001	BBAFR0000001	BBAFV04.61FN	EPA Cert
Ford	2009	4.6	CROWN VICTORIA, CROWN VICTORIA POLICE, GRAND MARQUIS, TOWN CAR	Gasoline/E85/CNG	Gasoline, Ethanol	Go Natural CNG	9FMXV04.6VDF	9FMXR0115GAA		CGNLR0115F29	CGNLV04.6F29	Int Appr
Ford	2009	4.6	CROWN VICTORIA, CROWN VICTORIA POLICE, GRAND MARQUIS, TOWN CAR	CNG	Gasoline, Ethanol	Go Natural CNG	9FMXV04.6VDF	9FMXR0115GAA		CGNLR0115F19	CGNLV04.6F19	Int Appr
Ford	2009	5.4	F-150, EXPEDITION, NAVIGATOR	CNG	Gasoline	BAF Technologies			EO A-364-0018	9BAFR0000001	9BAFT05.41CN	CARB
Ford	2009	5.4	E-150 CLUB WAGON, E-350 CLUB WAGON, E-150 VAN, E-250 VAN, E-350 VAN, E-350 CUTAWAY	CNG	Gasoline	BAF Technologies			EO A-364-0015	9BAFR0000001	9BAFT05.40CN	CARB
Ford	2009	5.4	F-250 2WD, F-250 4WD, F-350 WD, F-350 4WD	CNG	Gasoline	BAF Technologies			EO A-364-0017	9BAFR0000001	9BAFD05.43CN	CARB
Ford	2009	5.4	F150 2WD, F150 4WD, NAVIGATOR 2WD, NAVIGATOR 4WD, EXPEDITION 2WD, EXPEDITION 4WD	Gasoline/E85/CNG	E85	Go Natural CNG	9FMXT05.44ET	9FMXR0265NBR		BGNLR0265F29	BGNLT05.4F29	Int Appr

OEM	Original Model Year	Eng Disp	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion MFR	OEM Test Group	OEM Evap Families	Conversion Certificate Number	Conversion Evap Family	Conversion Test Group	Compliance Status
Ford	2009	5.4	F250 BED DELETE 2WD, F250 BED DELETE 4WD, F350 BED DELETE 2WD, F350 BED DELETE 4WD	Gasoline/CNG	Gasoline	Go Natural CNG	9FMXD05.46R6	9FMXF0250NBS		BGNLF0250FA9	BGNLD05.4F49	Int Appr
Ford	2009	5.4	F350 INCOMPLETE 2WD, F350 INCOMPLETE 4WD	Gasoline/CNG	Gasoline	Go Natural CNG	9FMXD05.46R6	9FMXF0260GAS		BGNLF0260FB9	BGNLD05.4F49	Int Appr
Ford	2009	5.4	F250 PICKUP 2WD, F250 PICKUP 4WD, F350 2WD, F350 4WD	Gasoline/CNG	Gasoline	Go Natural CNG	9FMXD05.46R6	9FMXR0250NBS		BGNLR0250FC9	BGNLD05.4F49	Int Appr
Ford	2009	5.4	E350 CUTAWAY	Gasoline/EB5/CNG	Gasoline/E85	Go Natural CNG	9FMXT05.45H4	9FMXF0265NAS		BGNLF0265FF9	BGNLT05.4F89	Int Appr
Ford	2009	5.4	EXPEDITION 2WD, NAVIGATOR 2WD	Gasoline/EB5/CNG	Gasoline/E85	Go Natural CNG	9FMXT05.45BR	9FMXR0265NBR		BGNLR0265FD9	BGNLT05.4F89	Int Appr
Ford	2009	5.4	E150 VAN, E150 WAGON, E250 VAN, E350 VAN, E350 WAGON	Gasoline/EB5/CNG	Gasoline/E85	Go Natural CNG	9FMXT05.45H4	9FMXR0265NAS		BGNLR0265FE9	BGNLT05.4F89	Int Appr
Ford	2009	5.4	F150 2WD, F150 4WD, NAVIGATOR 2WD, NAVIGATOR 4WD, EXPEDITION 2WD, EXPEDITION 4WD	CNG	FFV	Go Natural CNG	9FMXT05.44ET	9FMXR0265NBR		BGNLR0265F19	BGNLT05.4F19	Int Appr
Ford	2009	5.4	Go Natural CNG: E150 Van, E150 Wagon, E250 Van, E350 Cutaway, E350 Van, E350 Wagon, Expedition 2WD, F250 2WD Bed Delete, F250 4WD Bed Delete, F250 Pickup 2WD, F250 Pickup 4WD, F350 2WD, F350 2WD Bed Delete, F350 4WD, F350 4WD Bed Delete, F350 Incomplete 2WD, F350 Incomplete 4WD, Navigator 2WD	CNG	Gasoline/E85	Go Natural CNG	9FMXD05.46R6; 9FMXT05.45BR; 9FMXT05.45H4	9FMXF0260GAS; 9FMXF0250NBS; 9FMXR0250NBS; 9FMXR0265NBR; 9FMXR0265NAS; 9FMXF0265NAS	CGNLT05.4F19-003	CGNLR0000000	CGNLT05.4F19	EPA Cert
Ford	2009	5.4	IMPCO Technologies, Inc.: FORD EXPEDITION 2WD FFV, FORD EXPEDITION 4WD FFV, FORD F150 FFV 2WD, FORD F150 FFV 4WD, LINCOLN NAVIGATOR 2WD FFV, LINCOLN NAVIGATOR 4WD FFV	Gasoline/EB5/CNG	Gasoline/E85	IMPCO Technologies, Inc.	9FMXT05.44ET	9FMXR0265NBR	BZ9XT05.4FF9-014	BZ9XR0265FF9	BZ9XT05.4FF9	EPA Cert
Ford	2009	6.8	E-450	CNG	Gasoline	BAF Technologies	9FMXE06.8BWV	9FMXF0265NAT	BAF-ONHWY-09-01	9BAFF0000001	9BAFE06.89FN	EPA Cert
Ford	2009	6.8	E450, E450 CUTAWAY, E450 INCOMPLETE CHASSIS	CNG	Gasoline	NGV Motori	9FMXE06.8BWK	9FMXF0265NAT		BNGCR0000001	BNGCT06.8NG2	Int Appr
Ford	2009	6.8	E450	CNG	Gasoline	NGV Motori	8FMXH06.8AS4	8FMXE0265GAT		BNGCR0000001	BNGCT06.8NG3	Int Appr
Ford	2009	6.8	E450, E450 CUTAWAY, E450 INCOMPLETE CHASSIS	CNG	Gasoline	NGV Motori	9FMXE06.8AFA	9FMXF0265NAT		BNGCR0000001	BNGCT06.8NG4	Int Appr
Ford	2008	4.0	FORD RANGER 4X2, FORD RANGER 4X4, MAZDA B4000 4X2, MAZDA B4000 4X4	Gasoline/CNG	Gasoline	Auto Gas America	8FMXT04.02EG	8FMXR0165GBL		CAGTR0165GBL	CAGTT04.0008	Int Appr
Ford	2008	4.6	FORD CROWN VICTORIA, MERCURY GRAND MARQUIS, LINCOLN TOWN CAR	CNG	Gasoline	NGV Motori	8FMXV04.6VE9, 8FMXV04.6VEF, 8FMXV04.6VE3	8FMXR0115GAK		BNGCR0000CNG	BNGCV04.6VE9	Int Appr
Ford	2008	5.4	F-150 4X2, F-150 4X4, MARK-LT 4X2, MARK-LT 4X4, F150 STX SE 4X2	Gasoline/CNG	Gasoline	Auto Gas America	8FMXT05.44HA	8FMXR0240NBR		CAGTR0240NBR	CAGTT05.4008	Int Appr
Ford	2008	5.4	Ford: F250/F350 trucks	CNG or gasoline	Gasoline	FuelTek Conversion Corp.	8FMXK05.46RG	8FMXR0250NBS	CFTKE05.46RG-001	CFTKR0250NBS	CFTKE05.46RG	EPA Cert
Ford	2008	5.4	Ford: F250/F350 trucks	CNG or gasoline	Gasoline	FuelTek Conversion Corp.	8FMXK05.46RG	8FMXE0265GAS	CFTKE05.46RG-002	CFTKE0265GAS	CFTKE05.46RG	EPA Cert
Ford	2008	5.4	Ford: F250/F350 trucks	CNG or gasoline	Gasoline	FuelTek Conversion Corp.	8FMXK05.46RG	8FMXE0250GAS	CFTKE05.46RG-003	CFTKE0250NBS	CFTKE05.46RG	EPA Cert
Ford	2008	5.4	NGV Conversion, Inc.: E-Series Van, complete or incomp	CNG	Gasoline	NGV Conversion, Inc.	8FMXT05.45H2	8FMXR0265GAS; 8FMXE0265GAS	ANGCT05.45H2-001	ANGCR0000CNG	ANGCT05.45H2	EPA Cert
Ford	2008	5.4	NGV Conversion, Inc.: E-Series Van, complete or incomp	CNG	Gasoline	NGV Conversion, Inc.	8FMXT05.45H2	8FMXR0265GAS; 8FMXE0265GAS	BNGCT05.45H2-001	BNGCR0000CNG	BNGCT05.45H2	EPA Cert
Ford	2008	6.8	E450	CNG	Gasoline	NGV Motori	8FMXH06.8BST	8FMXE0265GAT		BNGCR0000001	BNGCT06.8NG1	Int Appr

OEM	Original Model Year	Eng Disp (L)	Conversion Models Covered	Converted to Operate On	Original Fuel	Conversion Manufacturer	OEM Engine Families(s)	OEM Evap Families (if applicable)	Conversion Exhaust Certificate Number	Conversion Evap Family	Conversion Engine Family	Compliance Status
Caterpillar	2004 to 2006	15.2	C15	Diesel or Diesel/CNG	Diesel	American Power Group, Inc.	4CPXH0928EBK, 5CPXH0928EBK, 6CPXH0928EBK				BAPGH15.2CP4	OUL
Caterpillar	2004 to 2006	11.1, 12.5	C11, C13	Diesel or Diesel/CNG	Diesel	American Power Group, Inc.	4CPXH0680EBK, 4CPXH0763EBK, 5CPXH0680EBK, 5CPXH0763EBK, 6CPXH0680EBK, 6CPXH0763EBK				CAPGH12.5CP4	OUL
Caterpillar	1998 to 2003	10.3, 11.9	C-10, C-12	Diesel or Diesel/CNG	Diesel	American Power Group, Inc.	WCPXH0629ERK, WCPXH0729ERK, XCPXH0629ERK, XCPXH0729ERK, YCPXH0629ERK, YCPXH0729ERK, 1CPXH0629ERK, 1CPXH0729ERK, 2CPXH0629ERK, 2CPXH0729ERK, 3CPXH0629EBV, 3CPXH0629EBX, 3CPXH0729EBV, 3CPXH0729EBX				CAPGH11.9CP4	OUL
Caterpillar	1998 to 2003	14.6, 15.8	C-15, C-16	Diesel or Diesel/CNG	Diesel	American Power Group, Inc.	WCPXH0893ERK, WCPXH0967ERK, XCPXH0893ERK, XCPXH0967ERK, YCPXH0893ERK, YCPXH0967ERK, 1CPXH0893ERK, 1CPXH0967ERK, 2CPXH0893ERK, 2CPXH0967ERK, 3CPXH0893EBV				CAPGH15.8CP4	OUL
Caterpillar	1998 to 2002	11.9	C-12	Diesel/CNG	Diesel	Clean Air Power, Inc.	WCPXH0729ERK, XCPXH0729ERK, YCPXH0729ERK, 1CPXH0729ERK, 2CPXH0729ERK				BCLAH0729E6J	OUL
Caterpillar	1998 to 2002	14.6	C-15	Diesel/CNG	Diesel	Clean Air Power, Inc.	WCPXH0893ERK, XCPXH0893ERK, YCPXH0893ERK, 1CPXH0893ERK, 2CPXH0893ERK				CCLAH0893E6J	OUL

Cummins	2004 to 2009	14.9	ISX	Diesel/CNG	Diesel	EcoDual Group LP	9CEXH0912XAK, 9CEXH0912XAL, 9CEXH0912XAM, 8CEXH0912XAK, 8CEXH0912XAL, 8CEXH0912XAM, 7CEXH0912XAK, 7CEXH0912XAL, 7CEXH0912XAM, 6CEXH0912XAK, 6CEXH0912XAL, 6CEXH0912XAM, 6CEXH0912XAH, 6CEXH0912XAJ, 5CEXH0912XAH, 5CEXH0912XAJ, 4CEXH0912XAH, 4CEXH0912XAJ			BEDGE14.9ISX	OUL
Daimler Chrysler AG	2006	6.37	OM 906	CNG	Diesel	NGV Motori	6MBXH6.37DJA			BNGCH6.37DJD	Int Appr
Daimler Chrysler AG	2005	6.37	OM 906	CNG	Diesel	NGV Motori	5MBXH6.37DJA			BNGCH6.37DJC	Int Appr
Daimler Chrysler AG	2004	6.37	OM 906	CNG	Diesel	NGV Motori	4MBXH6.37DJA			BNGCH6.37DJB	Int Appr
Daimler Chrysler AG	2003	6.37	OM 906	CNG	Diesel	NGV Motori	3MBXH6.37DJA			BNGCH6.37DJA	Int Appr
Detroit Diesel	2004 to 2009	12.7 L, 14.0 L, 12.8, 14, 14.8	SERIES 60 12.7L, SERIES 60 14L, OM460LA, MBE 4000, DD15, DD13	Diesel/CNG + Diesel	Diesel	American Power Group, Inc.	4DDXH12.7EGY, 4DDXH14.0ELY, 5DDXH12.7EGY, 5DDXH14.0ELY, 6DDXH12.7EGY, 6DDXH14.0ELY, 7DDXH12.8DJA, 7DDXH14.0ELY, 8DDXH12.8DJA, 8DDXH12.8TER, 8DDXH14.0ELY, 8DDXH14.8EY, 9DDXH12.8DJA, 9DDXH12.8DJD, 9DDXH12.8FED, 9DDXH12.8FEY, 9DDXH12.8TER, 9DDXH14.0ELD, 9DDXH14.0ELY, 9DDXH14.8EED, 9DDXH14.8EY			CAPGH14.8DD8	OUL
Ford	2012	6.8	V-10/285 hp	CNG	Gasoline	BAF Technologies			EO A-364-0031	CBAFE06.83NN	CARB
Ford	2012	6.8	V-10, 242 hp	CNG	Gasoline	BAF Technologies			EO A-364-0032	CBAFE06.89NN	CARB
Ford	2012	6.8	E450, 251 hp	CNG	Gasoline	IMPACO Technologies			EO A-328-0052	CZ9XE06.8CA1	CARB

Ford	2012	6.8	F450, 308 hp	CNG	Gasoline	IMPCO Technologies			EO A-328-0053		CZ9XE06.8CA2	CARB
Ford	2011	6.8	V-10/231 hp	CNG or HCNG	Gasoline	BAF Technologies			EO A-364-0025		BBAFE06.89CH	CARB
Ford	2011	6.8	V-10/285 hp	CNG	Gasoline	BAF Technologies			EO A-364-0027		BBAFE06.83NN	CARB
Ford	2011	6.8	V-10, 242 hp	CNG	Gasoline	BAF Technologies			EO A-364-0028		BBAFE06.89NN	CARB
Ford	2011	6.8	E450, 251 hp	CNG	Gasoline	IMPCO Technologies			EO A-328-0046		BZ9XE06.8C1A	CARB
Ford	2011	6.8	F450, 308 hp	CNG	Gasoline	IMPCO Technologies			EO A-328-0047		BZ9XE06.8C2A	CARB
Ford	2010	6.8	E-450, 242 hp, 285 hp	CNG	Gasoline	BAF Technologies	AFMXE06.8BWX	AFMXF0265NAT	BAF-ONHWY-10-01	ABAFF0000001	ABAFE06.89FN	EPA Cert, CARB
Ford	2009	6.8	E-450	CNG	Gasoline	BAF Technologies	9FMXE06.8BWX	9FMXF0265NAT	BAF-ONHWY-09-01	9BAFF0000001	9BAFE06.89FN	EPA Cert, CARB
Ford	2009	6.8	V-10/231 hp	CNG or HCNG	Gasoline	BAF Technologies			EO A-364-0020		9BAFE06.89CH	CARB
General Motors	2012	6	Engine V8/ model 605840211, engine codes 20,30,40,50,60	CNG	Gasoline	Greenkraft Inc			EO A-398-0002		CGKTE06.0GM1	CARB
General Motors	2012	6	Engine V8/ model 605851111, engine codes 20,30,40,50,60	CNG	Gasoline	Greenkraft Inc			EO A-398-0003		CGKTE06.0GM2	CARB
General Motors	2012	6	Van 265 hp	CNG	Gasoline	IMPCO Technologies			EO A-328-0051		CZ9XE06.0DCA	CARB
General Motors	2011	4.8	Van 237 hp	CNG	Gasoline	IMPCO Technologies			EO A-328-0044		BZ9XE04.8C1A	CARB
General Motors	2011	6	Engine models 605840211, engine codes 20,30,40,50,60	CNG	Gasoline	Greenkraft Inc	BGMXE06.0584	N/A	GKT-ONHWY-11-01.1	N/A	BGKTE06.0GM1	EPA Cert, CARB
General Motors	2011	6	GM 6.0L/266 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0230		BBYTE06.0613	CARB
General Motors	2011	6	Van 265 hp	CNG	Gasoline	IMPCO Technologies			EO A-328-0045		BZ9XE06.0C1A	CARB
General Motors	2010	6	GM 6.0L/266 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0218		ABYTE06.0613	CARB
General Motors	2010	8.1	GM 8.1L/283 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0221		ABYTE08.1C13	CARB
General Motors	2010	8.1	GM 8.1L/256 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0222		ABYTE08.1C12	CARB
General Motors	2009	6	GM 6.0L/266 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0205		9BYTE06.0613	CARB
General Motors	2009	6	GM 6.0L/266 hp CNG, 287 hp gasoline	CNG or Gasoline	Gasoline	Baytech Corporation			EO A-330-0216		9BYTE06.0623	CARB
General Motors	2009	8.1	GM 8.1L/283 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0208-1		9BYTE08.1C13	CARB
General Motors	2009	8.1	GM 8.1L/256 hp	CNG	Gasoline	Baytech Corporation			EO A-330-0211		9BYTE08.1C12	CARB
General Motors	2009	8.1	GM 8.1L/283 hp CNG, 317 hp gasoline	CNG or Gasoline	Gasoline	Baytech Corporation			EO A-330-0212		9BYTE08.1C23	CARB
General Motors	2009	8.1	Workhorse Custom Chassis W30, W62 (283 hp CNG, 317 hp gasoline)	CNG or Gasoline	Gasoline	Baytech Corporation			EO A-330-0213		9BYTF0407000	CARB
General Motors	2009	8.1	C4: Chevrolet Kodiak C4500, GMC Topkick C4500; 283 hp CNG, 317 hp gasoline	CNG or Gasoline	Gasoline	Baytech Corporation			EO A-330-0213		9BYTF0300998	CARB

Company	Address	Name	Telephone	E-Mail	Website
Altech-Eco	101 Fair Oaks Road, Arden, NC 28704	Mike Cerven	828-654-8300	mikecerven@altecheco.com	http://altecheco.com/
American Power Group, Inc.	2503 E Poplar Street, Algona, IA 50511	Ed Wolf	515-395-1360	ewolf@americanpowergroupinc.com	www.americanpowergroupinc.com
BAF Technologies	2415 Beatrice Street, Dallas, TX 75208	Brent Pope	214-231-1450	bpope@baftechnologies.com	www.baftechnologies.com
CNG Store (dba Auto Gas Store)	1596 West 2650 S, Ste 103. Ogden UT 84401 866-931-8940		866-931-8940	support@autogasamerica.com	www.autogasamerica.com
EcoDual	601 Bay Street, Beaufort, SC 29902	Doug Thomson	617-855-7999	doug.thomson@ecodual.com	www.ecodual.com
Go Natural CNG	2023 South 625 West, Woods Cross, Utah 84087	Lucas Kjar	801-281-4766	lkjar@gonaturalcng.com	www.gonaturalcng.com
GreenKraft					http://greenkraftinc.com/
High Pressure Group	1468 James Road, Gardnerville, NV 89460	Trent Colbert	775-455-4059	info@highpressuregroup.com	
IMPACO Automotive/Evotek	1274 South State Road 32, Union City, IN 47390	Beverly Osborne	765-305-2091	BOsborne@impcoautomotive.com	http://www.impcoautomotive.com/
Landi Renzo USA/Baytech	23535 Telo Avenue, Torrance, CA 90505	Gianluca Maso	310-283 8661	gmaso@landiusa.com	http://landiusa.com
NatGasCar	17000 St. Clair Avenue, Cleveland, OH 44110	Joe Wray	216-692-3700	jwray@natgascar.com	www.natgascar.com
NGV Motori	5589 Callcott Way Suite 1416, Alexandria VA 22312	Michelle Guzzone	866-636-2289	michelle@ngvus.com	www.ngvus.com
Venchurs Vehicle Systems	100 Industrial Dr. Adrian, MI 49221	Jason Boisher	517-266-5788	jboisher@venchurs.com	http://www.venchurscng.com/
Westport LD		John Howell	734-233-6869	jhowell@westport.com	http://www.westport-ld.com/

Please visit company websites for information on specific availability and ordering systems before contacting directly.

Appendix J. Training Material Information

Cummins-Westport Natural Gas Academy provides ideas and links to other sources of data and information on natural gas as a fuel and natural gas engines: <http://www.cumminswestport.com/natural-gas-academy> .

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4091845	Natural Gas	CD-ROM	Cummins Virtual College - Alternative Fuels	ENGLISH	\$691.60
4091900	Natural Gas	CD-ROM	Cummins Virtual College - (AF-1) Alternative Fuels - Natural Gas	ENGLISH	\$76.00
4091901	Natural Gas	CD-ROM	Cummins Virtual College - (AF-2) Alternative Fuels - Natural Gas	ENGLISH	\$76.00
4091902	Natural Gas	CD-ROM	Cummins Virtual College - (AF-3) Alternative Fuels - Natural Gas	ENGLISH	\$76.00
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